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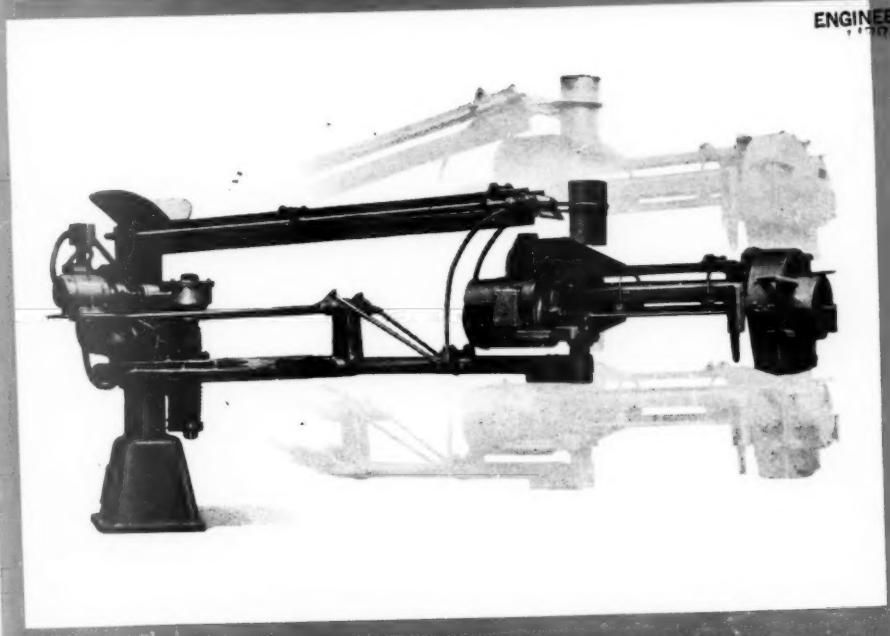

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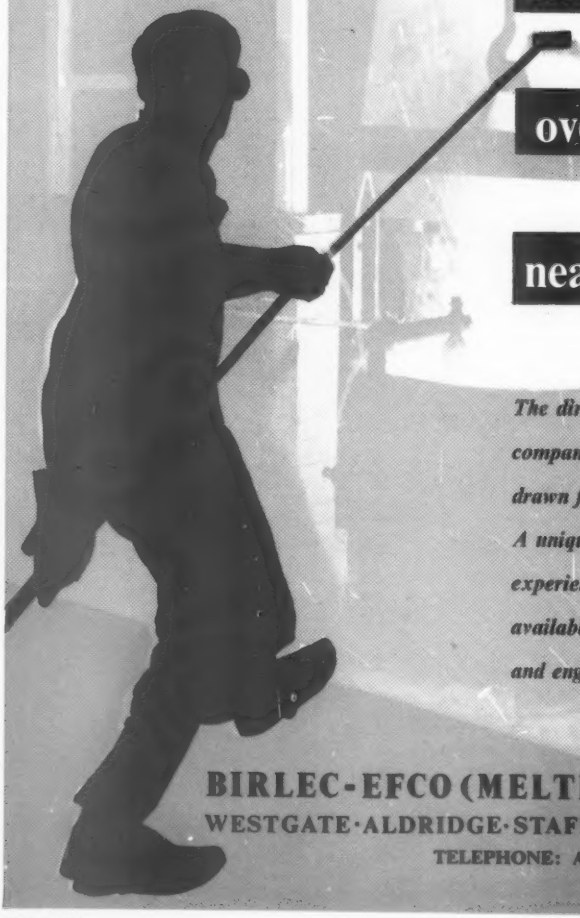

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Porto-Muller

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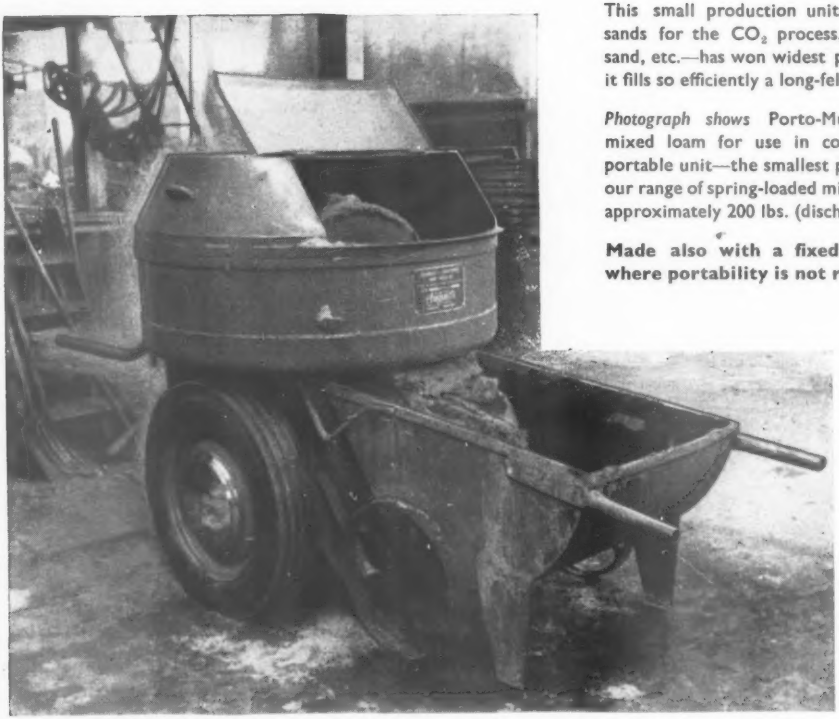
for MIXING LOAM



This small production unit for mixing loam, sands for the CO_2 process, oil sands, facing sand, etc.—has won widest popularity because it fills so efficiently a long-felt foundry want.

Photograph shows Porto-Muller, discharging mixed loam for use in core-making. This portable unit—the smallest production size in our range of spring-loaded mix-mullers, handles approximately 200 lbs. (discharged weight).

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J.J.M.

FOUNDRY
TRADE JOURNAL
Vol. 106 JANUARY 22, 1959 No. 2206

Elementary Mechanization

If we were asked where foundries in general could make the greatest money savings, we should unhesitatingly point to the provision of pallets and fork-lift trucks. A case was cited by Mr. H. P. Mott in a lecture he delivered to the Leicester and District Productivity Association. It appeared that work at a motor-car factory was being hindered because supplies of castings had to be manually unloaded each day from lorries, whereas a unit load would have made considerable savings. On visiting the foundry, he was told that two men could load 12 tons into a lorry in 20 minutes. A visit to the casting shop, however, showed not two men but a dozen with barrows for moving castings—and these men were moulding-machine operators. The management had failed to realize that the moulding machines represented their largest capital outlay and they were all standing idle whilst the men were engaged in transferring castings to the lorry. This, of course, is an obvious case for the institution of better mechanical handling, for the use of a wheelbarrow is only the most elementary step in that direction.

Even in the best of foundries one sees far too much material lying on the floor, though we realize that it may represent only a temporary resting place. However, executives would do well to ascertain how near this "temporary" event is inclined to become permanent. Now that the requirement of clear gangways for foundries is written into the Factory Laws, the use of fork-lift trucks, which range from the hand-operated to the highly-mechanized units, becomes a natural adjunct to handling problems. The most primitive type of fork-lift truck should eliminate the time used for filling a barrow and, moreover, should place a container full of components at a suitable height for the next stage in manufacture.

Mr. Mott cited a case where the installation of overhead cranes was unnecessary. It concerned a new building and because the use of overhead cranes was projected, it was to cost £6 per sq. ft. In this case, apparently, lift trucks were capable of doing the work equally efficiently and a building with a lower roof replaced the earlier proposition, with a saving of £65,000. The next best investment to a lift truck is a length of roller conveyor, even if it only serves for storage and delivery of finished castings. Modern practice demands that a minimum of materials should clutter up the foundry floor.

British Standards Institution

Code for the continuous sampling and automatic analysis of flue gases : Indicators and recorders (*B.S.* 3048 : 1958)

Prepared at the request of the Ministry of Fuel and Power to assist in raising the general level of combustion efficiency in industry, a new publication (B.S. 3048:1958) has been issued by the British Standards Institution dealing with automatic instruments which give a direct indication or record of flue gas composition. It points out that the analysis of flue gases from industrial plant serves the following main purposes: (1) Indicates whether the general conditions for efficient running have been fulfilled; (2) forms a useful check on the continuance of the above conditions and draws attention to any need for maintenance of the plant; (3) provides the necessary information for a full-heat balance to be calculated, and (4) indicates the type of atmosphere present in the furnace.

The main body of the code deals separately with: thermal conductivity instruments; instruments depending upon chemical absorption and chemical reaction; viscosity and density instruments; and with gas analysis instruments of recent origin. In addition there are parts on: determination of dew point, and on kindred subjects such as dust and smoke testing, smoke-density indicators and alarms, etc.

Besides pointing the way to economies in the running of industrial plant, the code will prove to be useful in the application of the Government's smoke abatement scheme. Copies of this publication may be obtained from the British Standards Institution, sales branch, 2, Park Street, London, W.1; price 15s. (Postage will be charged extra to non-subscribers.)

BCIRA and BSCRA at the Physical Society Exhibition

At the Physical Society Exhibition, held at Westminster, London, from January 19 to 22, the British Cast Iron Research Association displayed some newly-developed high-frequency dielectric heating equipment. This equipment is designed to obtain stress-strain curves by carrying out dry compression-testing of moulding sand at elevated temperatures. It is also capable of recording expansion curves on test-pieces of the size used for physical tests, and also shows the difference in brittleness of fracture of the specimen under test. The British Steel Castings Research Association exhibited a slide-rule calculator, available with either metric or inch scales, developed by the Association for the rapid calculation of exposure times in gamma radiography. Its range includes the following variables: radiation-source strength; source-to-film distance; film speed, and exposure time. Scales are incorporated for use with the isotopes Cobalt 60, Iridium 192, Cæsium 137, Thulium 170 and Radon.

Latest Foundry Statistics

Steel Castings: Employment was again slightly lower in the steelfoundry industry during November according to the joint *Bulletin* of the Iron and Steel Board and the British Iron and Steel Federation. The figures refer to November 8, when the total of all workers was 18,440 whereas a month earlier it was 18,620; a year earlier it stood at 20,710. The average weekly production of steel castings during November was provisionally estimated at 4,900 tons—a particularly low figure—being 400 tons lower than October.

Forthcoming Events

JANUARY 27

North-East Metallurgical Society

"Some Characteristics of High-strength Aluminium-alloys," by G. Goddard, 7.15 p.m., at the Cleveland Scientific and Technical Institution, Middlesbrough.

Incorporated Plant Engineers

South Wales branch: "Films on "Hydraulics," 7.30 p.m., at the South Wales Engineers' Institute, Park Place, Cardiff.

JANUARY 28

Institute of British Foundrymen

London branch: Apprentices evening: "Bring your Problems," compèred by A. Talbot, 7.30 p.m., at the Constitutional Club, Northumberland Avenue, W.C.2.

Birmingham branch: "Production of an Automobile Cylinder-head Casting in Grey Iron," by L. W. Bolton, 7.15 p.m., at the James Watt Memorial Institute, Great Charles Street.

JANUARY 29

Incorporated Plant Engineers

Sheffield & district branch: "Incentives in Maintenance," by J. W. Kingdon, B.Sc., 7.30 p.m., at the Grand Hotel, Sheffield.

JANUARY 30

Institute of British Foundrymen

London branch: Dinner/dance at the Connaught Rooms, W.C.2, 6.30 for 7 p.m.

Bristol and West of England branch: "Some Cupola Experiments," by K. G. Harris, 7.30 p.m., at the Royal Hotel, Bristol.

Falkirk section : "Enamelling," by H. London, 7.30 p.m., at the Temperance Cafe, Lint Riggs.

West Wales section: Film: "Modern Practice in the Iron and Steel Foundry," 7 p.m., at Glanmor Foundry Canteen, Llanelly.

Manchester Association of Engineers

"Powder Metallurgy," by L. Harrison, B.Met., Ph.D., 6.45 p.m., at the Engineers' Club, Albert Square, Manchester.

Institute of Vitreous Enamellers

Midland section: Annual dinner (men only) at the Station Hotel, Dudley, 7.15 for 7.30 p.m.

JANUARY 31

Institute of British Foundrymen

Wales & Monmouth branch: Film show: "Modern Practice in the Iron and Steel Foundry," 6 p.m., at the Engineers Institute, Cardiff.

Forty Years Ago

In the January, 1919, issue of the JOURNAL, the Editor reports that although the war had only been over a few months, practically all restrictions had been withdrawn. The output of electric-melted steel in 1917 reached 68,849 tons, having risen from but a few hundred tons since 1914 (the delay in publishing output figures had been due to censorship). The production of foundry pig-iron before the war was about 2,500,000 tons, but by 1917 it had been halved to 1,250,000 tons. At a guess the pre-war output of iron castings might have been of the order of 3,000,000 tons. During the war, increasing amounts of scrap were used in cupolas, as what was then called "semi-steel" was much in vogue. Apparently at this time, Leys Malleable Castings Company, Limited, entered the moulding-machine field and advertised the B.B. model. Reported in this issue was a case involving frauds on foundry suppliers where the defendant had formed 29 foundry companies over a period of 21 years.

Broad's New Canteen

Last week, Mr. G. Pargiter, M.P., opened a new canteen at the foundry of Broads Manufacturing Company, Limited, Humes Avenue, Hanwell, London, W.7. At the moment there is in the main room, seating accommodation for about 50 people, but ample space is available for double this number; the staff dining room will cater for about a dozen. The kitchen separates the two rooms. Until February only snack luncheons will be served. The canteen is very nicely decorated in pastel shades.

Additional Spun-pipe Capacity for India

New IISCO Plant for Production of 9- to 27-in. dia. Pipes

The new spun-iron pipe plant, brought into commission last year at Kulti, in India, is a part of the foundry development programme undertaken by the Indian Iron & Steel Company, Limited, at the firm's Kulti works. It has a rated production capacity of 7,500 tons per month working on a two-shift basis, and 9- to 27-in dia. pipes are made. The plant has been specially designed so that its output may be doubled at any time in the future without interfering with any of the existing units at the works. Together with the production from the original spun-pipe plant (3- to 12-in. dia. pipes), the total production will now exceed 12,500 tons per month, a figure which should rise to 20,000 tons per month when the final extensions are completed.

The Indian Iron and Steel Company's new spun-iron pipe plant, at Kulti, incorporating several ingenious features to facilitate smooth operation, was designed in collaboration with Stanton Ironworks Company, Limited, of Nottingham, who are the company's consultants for the spun-pipe plants. Except for the proprietary items, nearly all the fabrication, machining and erection of the plant and equipment was carried out by the Martin-Burn group of industries, under whose auspices Indian Iron & Steel Company operate. It was appropriate that the "first" pipe should be cast by Sir Biren Mookerjee, chairman of the company, and governing director of Martin Burn, Limited (see Fig. 1).

The covered area of the plant (80,000 sq. ft.), consists of one bay 67-ft. wide and two bays 48-ft. 6-in. wide. In all, 2,200 tons of steelwork (excluding plant and machinery) and 175,000 cub. ft. of concrete-work have been erected. A general description of the new plant is given below.

Cupola Section

The raw-material Gantry is 320 by 55 ft. Two broad-gauge tracks for raw materials and an adequate number of bins for stocking have been provided. The gantry is served by a 5-ton electric overhead-travelling crane, fitted with a circular 50-in. magnet. The "Select-O-Load" control system which has been installed enables the excitation of the magnet to be varied within very fine limits, thus permitting accurate control of the weight of the metallic charge entering the charge buckets.

Charging Equipment

The charging equipment is essentially an inclined skip, pivoted at the lower end and supported on two curved rails, while the upper end swivels on a curved track supported on the cupola stage. The charging unit can be moved from one cupola to another manually using a system of gears. The charging bucket is of the double-leaf drop-bottom type, and is automatically opened at the top of the hoisting and automatically closed and locked as it returns for the next charge. It has a capacity of 60 cub. ft. (approximately equal to a 2½- to 3-ton charge) and the floor-to-floor operational cycle occupies 3 min., the hoisting speed being 60 ft. per min. Coke and limestone hoppers adjacent to the charger have adequate storage capacity for 2-shift operation, and the floor weigh hopper for these, also of 60 cub. ft. capacity, is of the double-leaf hinged-door type, arranged for pneumatic operation. A dial-type weighing machine of 6,000-lb. capacity gives the weight of the pig-iron and scrap charged.

The batch weigh hopper for coke is suspended below the coke storage-hopper by four wheels carried on guide channels, and is also pneumatically operated; a 600-lb. weighing machine indicates the coke and limestone charged. Electric vibrating feeders, arranged for overhead suspension, are fitted to both coke and limestone hoppers and their operation is electronically controlled.

Charging Sequence

The sequence of charging operations is as follows:—

(*a*) The crane driver overhead excites the magnet, picks up pig-iron or scrap and travels to the discharge point; (*b*) the ground operator takes over, and by means of the "Select-O-Load" controller, discharges the required quantity of metal into the floor weigh hopper, and (*c*) the ground operator then returns the controller to the "maximum volts" position and, by visual signal to the crane driver, indicates that the crane may return to the stockpile for further charge.

Coke and limestone are fed from their storage bunkers into the batch weigh hopper through electric vibrating feeders. A signal light attached to the 600-lb. weighing machine is automatically put off, indicating that the required quantity of coke or limestone has been fed into the batch weigh hopper. The latter then travels and discharges its contents into the floor weigh hopper. The entire charge of pig-iron and scrap, coke and limestone is then discharged into the charging bucket underneath.

The travel of the batch weigh hopper and opening and closing of the floor weigh hopper are pneumatically controlled. With the "up" push-

FIG. 1.—*Sir Biren Mookerjee (left), chairman of the Indian Iron and Steel Company, and governing director of Martin Burn, Limited, is shown casting the first pipe, assisted by Mr. S. Wilson, the plant manager.*

button of the automatic hoisting unit depressed, the charging bucket rises to the top of the inclined plane (Fig. 2) where it trips a limit switch and stops for 30 sec. to discharge its load. A control relay then automatically operates the "down" contactor and the bucket descends until the bottom limit-switch is tripped, which stops the winch with the bucket in position to receive the next charge.

Cupolas

The two 20-tons per hour cupolas, which are of the continuous-tapping type, have a shell diameter of 9 ft. and a lined diameter of 6 ft., with a height of 27 ft. from baseplate to charging sill, and 60 ft. from baseplate to the top of the furnace. The wind-belt (13 ft. dia.) is independent of the cupola shell. Three rows of tuyeres have been provided, with eight main tuyeres (9 ft. by 6 in.) in the bottom row, and 24 auxiliary tuyeres (3 in. dia.) in the upper two rows, giving a tuyere : cross-section area ratio of 14.77 per cent. The blast—12,000 cub. ft. per min. at 40 to 50 in. w.g.—is supplied through a 24-in. main by two blowers working in tandem. Two butterfly valves have been installed at the blast inlets of the wind-belt, and an air-weight controller, located in the blower-house, controls the flow or weight of air into the cupolas. Molten metal is continuously tapped into a 7½-ton receiver (Fig. 3), while the slag is collected in pots mounted on narrow-gauge bogies, and dumped into wagons by means of a jib crane.

Core Shop

As this centrifugal-casting process employs permanent moulds of forged steel, there is no moulding carried on. Cores are required, however, for the socket ends of the pipes. In the coreshop (Fig. 4), the sand plant consists of a 2-ton per hr. sand-dryer heated by means of coke-oven gas. Sand is fed into it by a 600-lb. skip loader *via* a feeder belt, and at the discharge end a vibratory screen is fitted. A blower, located at floor level, conveys the sand, by means of pneumatic conveying system, into a reception cyclone, fitted with cotton-sleeve filters, and from thence into a 10-ton storage hopper. The sand, which at the dryer discharge point is at a temperature of 220 to 230 deg. C., is then cool and ready for use. Another 600-lb. skip-loader conveys it to a batch-type Fordath mixer of 560 lb. capacity.

In the mixer, sand is prepared by the addition of flour, linseed oil, and water, in that order, their proportions being: dry sand—450 lb.; flour—16 lb.; oil—9 pints, and water—10 pints, the whole mix taking about 8 min. The prepared sand is then fed by a travelling hopper into one or other of three stationary hoppers, one of which feeds two small core-

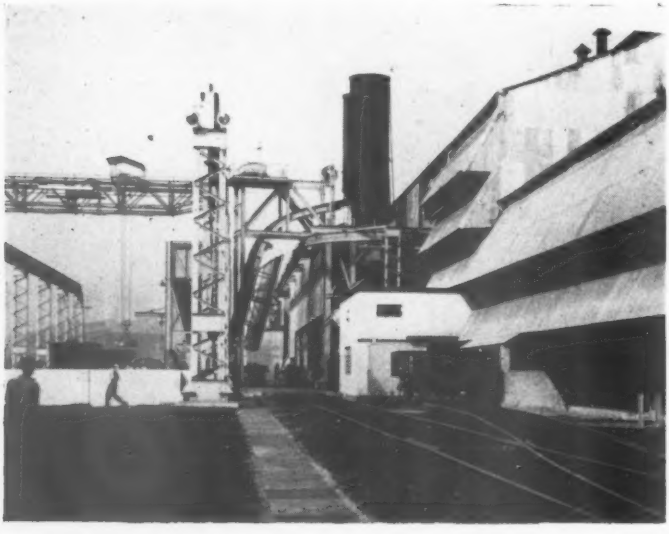

FIG. 2.—*View of the plant showing the natural side-ventilation system employed in the building, and, in the centre background, the cupolas and charger, with coke and limestone hoppers, and gantry, on the left.*

making machines, and the others a pair of larger machines. These coremaking machines are of the turn-over type; the turning-over in the case of the small machines being effected by a sets of counterweights, and in the larger machines by means of a hand-wheel. In the latter case, ramming is carried out by pneumatic rammers suspended from an overhead structure. In the small machines the cores are stripped by lowering a spring-loaded drum, whilst in the large machines this is done by pneumatic cylinders. The larger cores are delivered to the drying stoves by means of a core bogie.

Two special Acme No. 4 Junior core-stoves have been installed, each equipped with 16 single-tier auto-loading trays. The horizontal roller-conveyor at the loading end enables the coreplates to be pushed into the stove without lifting, as the rising traps collect the load automatically; whilst at the opposite end, the descending trays discharge the coreplates onto an inclined roller-conveyor. The time taken for the whole operation is 1 hr. 40 min. The conveyor is driven by a 2 h.p. motor coupled *via* a p.i.v. (positively infinitely variable) gear which, in turn, is coupled to a double worm-reduction gear.

The stoves are heated from a firebox self-contained within the body of the stove, lined throughout with firebricks, the air for combustion being supplied by a motor-driven fan. The burners are equipped with thermostatic control and flame-failure protection, and maintain the temperature in the stove at approximately 220 deg. C. An alternative light-oil heating system has also been provided for the stoves.

Casting Shop

Apart from motors, gears, Tecalemit pumps and some fittings, all the construction work in the casting shop proper has been carried out locally to Stanton designs. The whole shop (Fig. 5) is traversed by a 10-ton capacity overhead crane which spans the entire casting-machine area. Readers are no doubt familiar with the de Lavaud system of pipe-spinning and therefore this will not be elaborated upon here. It suffices that in the new Kulti foundry the basic process is retained unchanged, although casting plant, and especially handling and annealing methods, make use of the most modern expedients available to serve the high-productivity scheme.

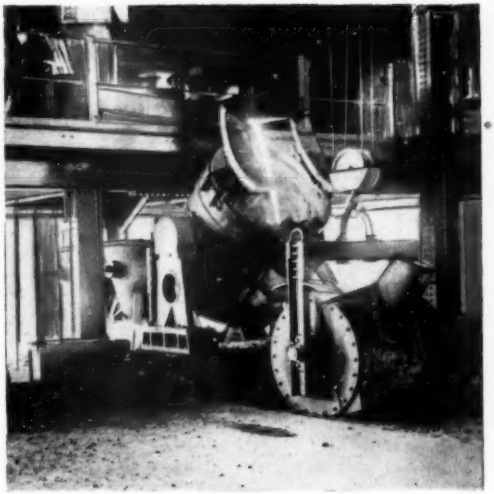

FIG. 3.—*Front side of the cupolas, with the hot-metal receiver delivering metal to a pouring ladle.*

The spinning machines produce a range of pipes from 9 to 27 in. dia. Movement of the casting machines to and fro as pouring and pipe-withdrawal proceed is regulated by hydraulic rams operating at a pressure of 1,000 lb. per sq. in. through a system of pulleys and wire ropes, control being effected by two valves located at the

FIG. 4.—*Illustrated are, left to right, the sand dryer, the core stoves, and the cyclone and storage bunker.*

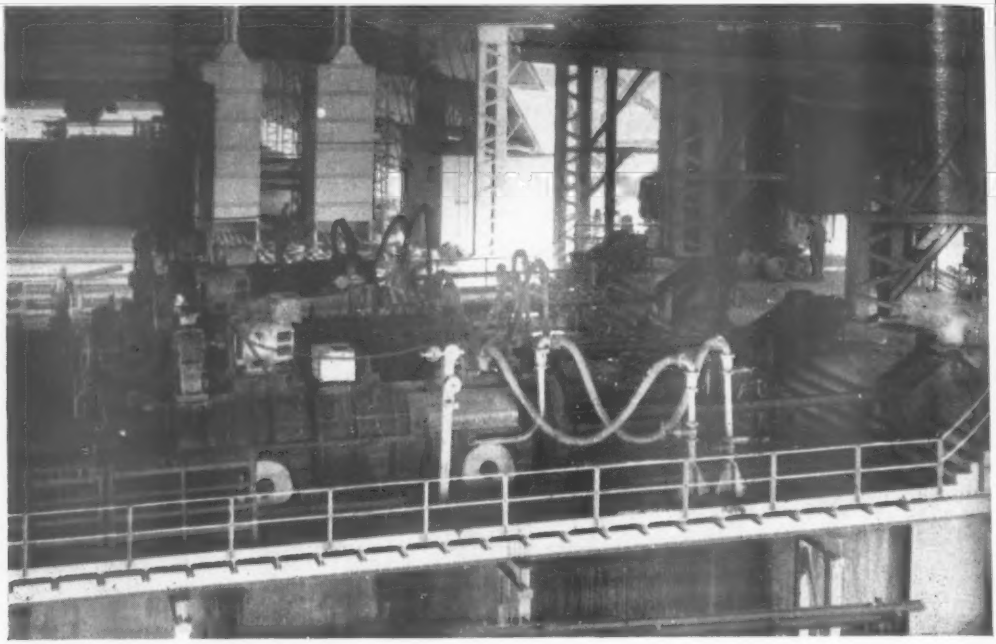

FIG. 5.—*General view of the casting shop at Kulti; the core stoves can be seen in the background.*

top end of the machine beds. The hot metal is conveyed from the receiver to the tilting hoppers by means of 3½-ton barrel ladles, picked up by the overhead telphers These telphers run on an endless track and keep the machines continuously supplied with metal. The tilting hoppers are tilted at a controlled rate by means of an oil-hydraulic system operating at 600 lb per sq. in., the controls of which are situated alongside the valves which control the traverse of the machines.

Each spinning machine consists of a cast-iron waterbox, inside which is mounted an alloy-steel mould. Rotation of the mould is governed by a variable-speed motor and sets of rollers give the mould axial support. The hopper contains metal for casting only one pipe at a time, the metal being delivered to the mould through a trough. The sand core, which is required for each pipe cast, is fitted into the socket end of the mould to obtain the necessary profile, and also to seal off that end of the mould.

Pouring

The casting operation commences with the mould rotating and the machine moving to its limit position at the casting end. The metal hopper is tilted and the metal flows down a trough and into the socket-end of the mould. The machine then moves downwards, the metal being deposited on the mould in spiral fashion until, at the end of its journey, a complete pipe is formed. The circulating water in the waterbox surrounding the mould rapidly freezes the metal, and the rotation of the mould is continued until the pipe has solidified sufficiently to permit its withdrawal. The pipe is then extracted, and conveyed to the rolling gantries leading to the normalizing furnace by pneumatically-actuated flag and pipe-lowering gears, and hot-pipe transfer-bogies. The bogies are controlled by electric winches located under the casting platform. All pipes are weighed and any deviation in weight is indicated to the operator by a system of coloured lights placed opposite each machine.

Normalizing Furnace

All pipes receive a closely controlled heat-treatment in a normalizing furnace, to relieve casting stresses. This furnace has a capacity, under continuous operating conditions, of 20 tons per hr. The refractory furnace roof is supported from the overhead structure by hanger bolts suspended between twin plates which rest on roof beams. The cooling zone is provided with water troughs extending over the entire width. The furnace hearth is supported on cast-iron plates, and two chain troughs run the full length of the furnace. Two sets of endless-conveyor chains move the pipes, the chains being driven by a 12-h.p. motor through two gearboxes, one a double-worm reduction gear unit, and the other a single-reduction double-helical unit. An adjustable radiation screen, made

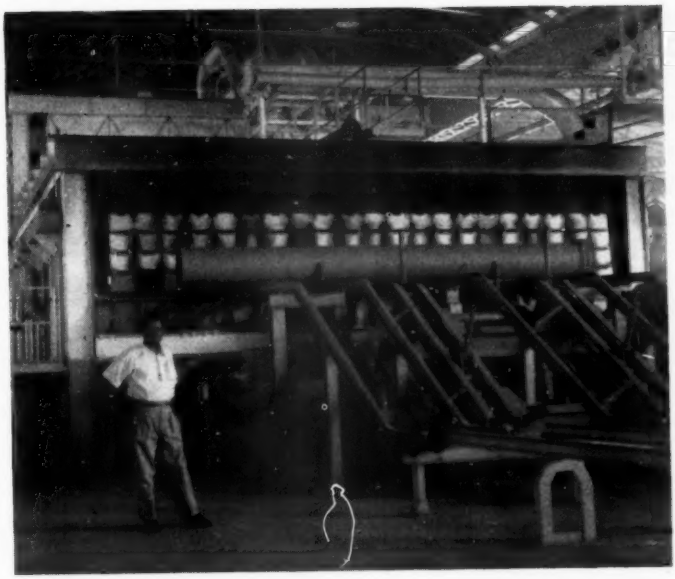

FIG. 6.—*Pipe at the exit end of the coke-oven-gas fired normalizing furnace. Note the chain-driven creep conveyor.*

from "Javelle" standard-steel interlocking panels, is fitted to reduce the hot gases passing from the heating to the cooling zone.

Low-pressure burners, suitable for coke-oven gas, have been provided around the four walls of the heating zone, and alternative means of firing with tar have also been fitted. Air for combustion is supplied by a "Sirocco" forced-draught fan. Pyrometers have been fitted throughout the length of the furnace, and the pressure regulation is effected by an Askania regulator, automatic temperature control being obtained through the power cylinders, which regulate the gas and air proportions to suit a pre-determined temperature. The recording instruments indicating temperatures at various parts of the furnace, and also the gas and air flow, are located in a separate instrument house. On leaving the furnace, the pipes are lowered to bench level by means of two sets of endless conveyor chains (Fig. 6), driven by a 5-h.p. motor.

Finishing Section

Cleaning

After leaving the normalizing furnace, the pipes are batched and conveyed to the rolling gantries by a power-driven bogie. The inside of the pipes are then cleaned by scouring machines and, at a later stage, the socket ends are cleaned by grinders suspended from overhead structures, the pipes rotating on pipe-rotating machines. Three test pumps, one for small, and two for large sizes of pipes, have been provided for hydraulic testing of the pipes (Fig. 7), the larger pumps being equipped with pneumatic throw-out gears for ease of handling.

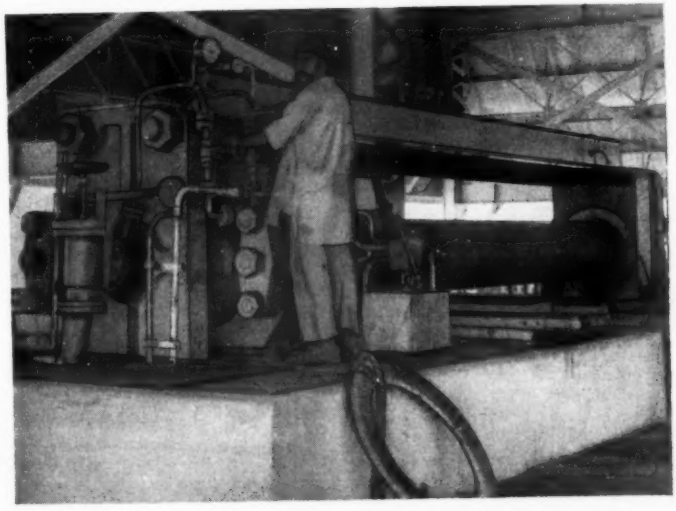

FIG. 7—*Pipe being hydraulically tested. In the foreground is one of the sealing rings used to make the joint between the platen of the test rig, and the end of the pipe under test.*

Coating

After being weighed, the pipes are passed through a reheating stove (Fig. 8) which is heated by the waste gases from the normalizing furnace, and by auxiliary burners, in order to raise them to a suitable temperature for coating. Thermocouples record the stove temperature. A "Sirocco" blower supplies the forced-draught for combustion, and the door lifting is done, through a system of pulleys and wire ropes, by hydraulic cylinders located at either end of the stove.

An electro-hydraulic walking peel conveys the

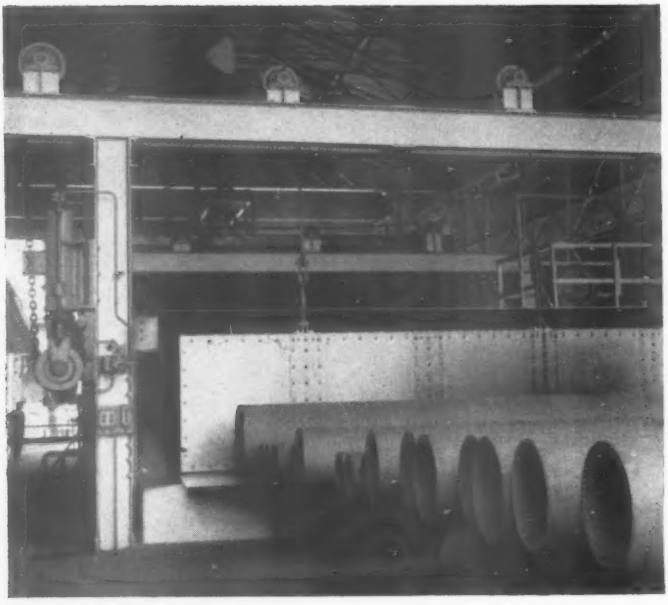

FIG. 8.—*Pipes waiting to be passed through the reheating stove before coating with tar.*

pipes through the stove in batches, and they are then immersed in the coating mixture. They remain for about 10 min. dipped in the bath of tar, at a temperature of 150 deg. C., and are then moved to the draining tray, which is raised end-wise for complete drainage. The movement of the pipes throughout the dip is entirely mechanical. Auxiliary burners have also been fitted in the dipping section, and a "Sirocco" fan supplies the necessary forced draught for combustion, while another fan exhausts the waste gases through a chimney.

After coating, the pipes are conveyed by a power-driven bogie to the rolling gantries connecting with the stockyard gantry (Fig. 9). Here the firm's monogram, size and class are stencilled on, and the castings are straw-banded for safety in transit. The stockyard gantry is 360 ft. long and has a span of 85 ft. It is served by a 5-ton electric overhead-travelling crane. The pipes are loaded by it into railway wagons stabled on a broad-gauge track located towards the north of the gantry.

Technical Control

To ensure consistently high quality, rigid technical control is exercised at all stages of manufacture, and a well-equipped laboratory has been set up to carry out complete chemical, metallographic and physical tests. Pig-iron, coke, lime-

FIG. 9.—*Stockyard gantry, which is 360 ft. long and has a span of 85 ft., with its 5-ton overhead crane.*

stone, ferro-alloys and core materials are analysed before use, and samples drawn from the cupola metal are checked at regular intervals. Modern instrumentation is employed in the operation of the cupolas, normalizing furnace and the coating section, and all pipes are individually weighed, gauged for thickness, hydraulically tested and inspected. The tensile, Brinell hardness, and ring and bar tests, and chemical analysis, are carried out in the laboratory in accordance with British Standard Specifications.

Ancillary Services

Three Broom & Wade compressors, each of 420-cub. ft. per min. capacity at 100 lb. per sq. in., and two large receivers, have been installed. These permit ample margin for working all the pneumatically-operated units in the plant, as well as running the normalizing furnace on tar in the event of failure of the gas supply. Adequate air mains have been laid throughout the plant to keep frictional losses to a minimum.

Electrical Equipment

An underground cable, drawing power from the works' 3.3 kv. system, feeds the plant sub-station. A 600 kva. Hackbridge Hewittic rectifier transformer, a 800 kw. 440 v. rectifier, and a 440 v. Bertram Thomas distribution gear, supply the d.c. requirements; whilst a 1,000 kva. 440 v. Parsons' transformer, and a 440 v. 3-phase 50-cycle Reyrolles' distribution gear supply the a.c. power. Three capacitors for power factor correction have been installed.

Pump House

In the pump house are located two cooling, and two circulating Harland pumps, the capacities being 800 g.p.m. each, at a total head from all causes of 62 ft., and 101 ft., respectively. The cooling pumps pick up water from the return hot-water sump and force it through a set of Harland low-pressure spray nozzles in a large cooling tank, giving a drop in temperature of about 16 deg. F. The circulating pumps deliver the cooled water through stand pipes 65-ft. high to ensure a constant pressure head for cooling the waterboxes and normalizing furnace, filling pipes for testing, and many other purposes.

In addition, there are two Harland hydraulic pumps of 100 g.p.m. capacity each at 1,000 lb. per sq. in. The hydraulic system consists of these two pumps; leak-off non-return valves fitted with velocity-reducing chambers; an air-loaded (by a separate compressor) hydraulic accumulator of 200-gall. useful-water capacity; a low-level controller, and a thruster-operated valve. To guard against suction starvation, the hydraulic suction tank is equipped with two sets of float-operated controls, one to sound a siren when the level goes low, and the other to cut off power supply to the pump when the level falls dangerously low. One pump of each type is more than adequate to meet the plant's present and estimated future requirements.

The following firms are the principal contributors in the building up of the new Kulti pipe-spinning plant:
Alldays & Onions, Limited, Birmingham (cupola blowers).
Joseph Booth, Bros., Leeds (transfer bogies, walking peel machines).
Burn & Company, Limited, Howrah, India (steelwork for buildings, crane gantries, etc.).
Braithwaite, Burn & Jessop Construction Company, Limited, Calcutta (foundations and erection).
Burn & Company, Limited, Raniganj, India (refractories).
Broom & Wade, Limited, High Wycombe, Buckinghamshire (compressors).
Crofts (Engineers), Limited, Bradford (pipe grinders, worm-gear units).
Drakes (Engineers), Limited, Halifax (pipe-rotating machines).
Foundry & Engineering Company (West Bromwich), Limited (core stoves).
Foundry Equipment, Limited, Leighton Buzzard, Bedfordshire (coreshop equipment).
Fordath Engineering Company, Limited, West Bromwich (core-sand mixer).
Harland Engineering Company, Limited, Timperley (hydraulic and general-service pumps).
Hooghly Docking & Engineering Company, Limited, Howrah, India (air receivers, sundry machinery).
Indian Iron & Steel Company, Limited, Burnpur and Kulti, India (spinning machines, water-boxes, various iron castings and miscellaneous equipment).
Incandescent Heat Company, Limited, Birmingham (cupola-charging plant).
Metropolitan-Vickers Electrical Export Company, Limited, Manchester (spinning-machine motors and control gear).
Henry Pooley & Son, Limited, Birmingham (weighing machines).
Priest Furnaces, Limited, Middlesbrough (annealing furnace, reheating stove, tar-dipping plant).
C. A. Parsons & Company, Limited, Newcastle upon Tyne (transformers, switchgear, lighting, sub-station equipment, etc.).
A. Reyrolle & Company, Limited, Hebburn (transformers, switchgear, lighting, sub-station equipment, etc.).
Stanton Ironworks Company, Limited, near Nottingham (spinning-machine gearboxes and roller assemblies).
Sandholme Iron Company, Limited, Todmorden (coremaking machines, pipe-scouring machines, traverse tower assemblies).
Stewarts and Lloyds of India, Private Limited, Calcutta (pipe lines, etc.).
Stein & Atkinson, Limited, London (hydraulic ladle-tilting gear).
B. Thornton, Limited, Huddersfield (pipe cutting-off machines).
Tecalemit (India), Limited (spinning-machine lubricating equipment).
Vaughan Crane Company, Limited, Manchester (overhead cranes, telphers).

Machine-tool Industry recovers Slightly

Slight recovery in the past few months of the machine-tool industry is attributable principally to improved export demand rather than to a better home market. The October figures supplied by the Machine Tool Trades Association show that home orders rose by £520,000 to £3,540,000 (£4,500,000 in October, 1957), compared with the September figure of £3,020,000. Export orders were £1,480,000 (£1,780,000), compared with £1,050,000 in September, and the November figures should receive an even greater boost from the £1,000,000 Chinese order.

Deliveries showed a downward trend. To the home market they dropped from £5,350,000 in September to £4,990,000 (£6,790,000) in October and export deliveries dropped from £1,890,000 to £1,600,000 (£2,190,000). The home order-book at end-October stood at £42,700,000, compared with £44,450,000 the month before and £61,990,000 a year previous. The corresponding figures for the export order-book were £15,340,000, £15,510,000, and £20,270,000.

The sharpest decline in exports for the first 11 months were to the US—down from £2,500,000 to just over £1,000,000 and to Russia—down from over £1,000,000 to less than £100,000. Total exports in the same period have fallen from £26,000,000 to £22,000,000.

It will probably take some time for there to be any marked effect in the home market consequent upon the ending of the credit squeeze. Within the general trends there are sharp divergencies. The market for the lighter machine-tools is in many cases still poor and orders can be met out of stock, but some of the more specialized machine-tools are still in good demand and their manufacturers have longer order-books.

British Manufacturers share BTC Order

Orders for 102 diesel shunting locomotives and 37 sets of power equipment for locomotives to be built in railway workshops have been placed with British manufacturers by the British Transport Commission. Companies sharing the orders are the Drewry Car Company, Limited (13 locomotives of 204 h.p. and 37 sets of equipments for 200 h.p. locomotives), the North British Locomotive Company, Limited (35 locomotives of 225 h.p.), the Hunslet Engine Company, Limited (33 locomotives of 204 h.p.), and Andrew Barclay, Sons & Company, Limited (20 locomotives of 204 h.p.). The total value of the orders is £1,800,000.

British Railways now has 1,000 diesel shunting locomotives in operation with another 700 on order. In a few years' time 2,000 such locomotives will be in service and it is hoped to eliminate the use of steam engines for shunting duties. The Scottish Region of British Railways will receive 56 of the locomotives in the latest order, the North-Eastern Region, 58, the Southern Region, 13, and the Western Region, 12. Of the locomotives built by British Railways, 25 will be made at Doncaster and 12 at Swindon.

Continuing expansion at home and overseas has prompted the English Electric Company, Limited, to appoint the following executives:—Mr. E. B. BANKS, director of commercial policy, contracts and sales; Mr. P. L. DE LASZLO, director of corporate affairs; Mr. W. M. HURTON, director of group manufacturing development; and Mr. L. H. SHORT, director of overseas operations.

Qualcast's New Project

As announced in the JOURNAL last week, Qualcast, Limited, lawn-mower manufacturers, and makers of metal castings for the motor-car and other industries, are building a new foundry plant at Derby, at an estimated cost of £500,000. The plant, which is to be installed in the existing foundry, is expected to be ready in June.

Mr. V. Jobson, chairman and managing director of the company, announced the project at the annual dance of the grey-iron division. He said "it will be the most up-to-date and effective plant, certainly in England and possibly in Europe," and added that output would be greatly increased; lower costs were anticipated as were also better working conditions. Mr. Jobson then commented on the present state of the foundry industry, and pointed out that although many foundries were working four-day and some three-day weeks, Qualcast had maintained the normal working week. "At times like this," he said, "competition becomes more severe and we have to fight harder to maintain our place in industry," but, he went on to say, founders should look upon problems as a challenge.

During the evening presentations were made to long-service employees, amongst whom was Mr. H. A. Longden the man who, according to Mr. Jobson, was responsible for the manufacture of more lawn-mowers (7,000,000) than any other man. Mr. Longden is retiring after 38 years as superintendent of the finished products division of the company. Others to receive presentations were Mr. E. Cartwright for 40 years' service in the foundry; Mr. R. Murden, a fettling shop employee, 40 years, and also from the fettling department were Mr. G. W. Bentley; Mr. G. Smith; Mr. L. Franklin; and Mr. J. A. Quinn, all with 20 years' service.

Atomic Energy Authority to join EEUA

Application for associate membership for a period of two years of the Engineering Equipment Users' Association has been made by the UK Atomic Energy Authority. After that it is probable that the Authority will seek full membership.

The association, which was formed in 1949 to provide members with a means of exchanging information on the standardization of engineering materials and equipment, works as far as possible through the British Standards Institution and has representatives on over 200 BSI technical committees. It also has some 26 technical panels of its own which are formed from member companies' own resources, and which issue handbooks and codes of practice.

Among the EEUA's eight full members are Albright & Wilson, Limited, chemical manufacturers, the Dunlop Rubber Company, Limited, Imperial Chemical Industries, Limited, Monsanto Chemicals, Limited, and Shell Petroleum Company, Limited. The six associate members are A. Boake Roberts & Company, Limited, industrial chemical manufacturers, of London, E.15, the British Transport Commission, Metal Box Company, Limited, the National Coal Board, United Glass Bottle Manufacturers, Limited, and United Steel Companies, Limited.

Sir PATRICK HAMILTON, who has been elected a member of the Council of the London Chamber of Commerce, is chairman of the Expanded Metal Company, Limited, and a director of Simon-Carves, Limited, and Renold Chains, Limited.

"Bridging the Gap"— Supplementary Training arranged for Foundry Apprentices at International Combustion, Limited

Recent reports on foundry apprentice training in this country have indicated that there are significant gaps in the knowledge imparted. One of these is lack of integration between general and technical education, and another the somewhat restricted activity and outlook of young people within their own firm. Many enlightened employers recognize these difficulties and are seeking solutions. One of the firms which have inaugurated supplementary training for their younger craftsmen has submitted the following account of the arrangements.

For some time now, the management of International Combustion, Limited, at Derby, has been seriously considering the position of its apprentices employed in the foundry and patternshop, with the view to increasing their knowledge of foundry practice. It was felt that the existing method of workshop training should be supplemented with a series of lectures given by the firm's executive staff, who have been practically trained, and have considerable knowledge acquired through years of experience in the foundry industry.

With this in view, and bearing in mind that all lectures should have a bias towards practical training, arrangements were made for all apprentices employed in the foundry and patternshops to attend, during working hours, a series of lectures upon the following subjects: (1) Casting design; (2) patternmaking; (3) general foundry practice; (4) metallurgy, sand preparation and analysis; (5) inspection of castings, and (6) discussion topics.

Progressive Encouragement

The lectures are so arranged that knowledge and information given will be advanced stage by stage as the series progresses, over a period of two years. The apprentices are encouraged to question each lecturer regarding particular foundry problems, and discussions take place on any item that is of interest to, or allied to the industry. The accompanying illustration shows the boys at one of the lectures, where a question has been asked and is being discussed and answered by the foundry manager. It

Lecture room, at International Combustion, Limited, for supplementary training of foundry and patternshop apprentices. It is equipped with blackboards, epidiascope, slide projector, and film-show apparatus.

is proposed, as part of the curriculum, that visits be arranged to other firms' foundries in the vicinity of Derby, and further afield, to gain experience on methods of production, as well as to assess working conditions, etc.

So far, the general opinion seems to suggest that lectures in this form are well worthwhile, and that the additional knowledge given is of immense value to the practical-minded boy. It should be pointed out that this further training does not replace in any way the technical and theoretical education received at the Derby & District College of Technology, which all apprentices are encouraged to attend to study the City & Guilds of London Institute Courses in foundrywork and pattern-making.

Additional Note

Up to a few years ago, the firm found it was practically impossible to find and advise boys to enter the foundry industry, but now, with the recent progress in foundry technique and conditions, the number of entrants is steadily growing. Consequently, much more can be done to increase their knowledge and learning.

Drop in RTB Profit

Consolidated manufacturing and trading profit for the year ended September 27, 1958, of Richard Thomas & Baldwins, Limited, dropped by £1,663,739 to £8,030,668 (£9,694,407). After adding investment and other income and providing £2,596,519 (£2,294,906) for depreciation and £2,638,598 (£3,417,452) for tax, there remains a net balance of £3,014,037 (£4,264,563).

The balance available to the parent company after charging terminal expenses on closure of old-type works in west Wales, less estimated taxation relief of £254,569 (nil) and including £875,000 (£1,400,000) in respect of taxation provisions for prior periods no longer required, was £3,628,794 (£5,503,440).

Dividends paid and recommended amounting to 13½ per cent., less tax, require £840,576 (£840,576), and £1,400,000 (£1,500,000) has been transferred to fixed assets replacement reserve. A further transfer of £1,000,000 (£2,500,000) has been made to general revenue reserve and £311,177 (£229,823), representing the reduction in tax liability attributable to investment allowances, has been transferred to investment allowances reserve. The surplus carried forward was £7,998,546 (£7,921,505).

Mr. W. H. SHARP, joint managing director of Thomas Smith & Sons (Rodley), Limited, has been appointed sole managing director.

Baker Perkins' Third Apprentice School

On January 7, the new apprentice school at the Bedewell works of Baker Perkins, Limited, was opened by the Right Honourable, the Earl of Halsbury, president of the Institution of Production Engineers. Also present at the ceremony were Mr. A. I. Baker and Mr. H. Crowther (chairman and vice-chairman, respectively, of Baker Perkins' board of management). This new apprentice school is the third to be opened by the Baker Perkins group of companies, the first, at Peterborough, having been opened in 1954 by Mr. Harold Watkinson, then Parliamentary Secretary of the Ministry of Labour and National Service; the second school was opened last year at Leeds at one of the Forgrove Machinery Company, Limited's, works, by the Parliamentary Secretary of the Ministry of Labour and National Service, at that time Mr. Robert Carr. Mr. Carr was chairman of the committee which produced the report "Training for skill."

All the schools have been equipped with the most up-to-date machine-tools and equipment. The present Baker Perkins' apprentice-training scheme dates back to 1945, when the directors approved a plan incorporating the best features of training known to the engineering industry. This training scheme ensures a steady flow of skilled craftsmen, technicians and technologists into the group, which has 10,000 employees in its world-wide branches. There are about 450 apprentices under training in the group at present.

FIG. 1.—*General view of the apprentice school at the Bedewell works of Baker Perkins, Limited.*

"Mr. Chairman and Gentlemen . . . ."

By "Jacques"

Oh wad some Power the giftie gie us
To see oursel's as ithers see us!
It wad frae monie a blunder free us
And foolish notion:
What airs in dress an' gait wad lea'e us
And e'en devotion! [Robert Burns (*bicentenary January 25*)].

Lectures and discussions are again in full spate at most engineering societies and allied branches where a winter syllabus of meetings is arranged during the "close season" for works visits. At such meetings, practical foundry experience and the sciences are "put over" from the rostrum and subjects are ventilated with a more or less enthusiastic delivery and reception, according to the personality and stage presence of the speaker, and the lucidity and phrasing of his remarks.

A lecturer possessing confidence in his own ability and a complete mastery of his subject is well able to control the meeting and quite expects discussion or critical comment later. His diction and timing are acquired by long practice. Like a leading soprano, he knows just when to pause, for how long, and when to breathe in. His change of stance or thumbs in (or out) of the waistcoat or trousers, and other "fidgets," are executed with a cavalier-like grace of movement unnoticed by his audience. For good presentation, papers are usually "read" (against the clock) and sub-edited in a masterly manner beforehand, paddings, unnecessary graphs and hieroglyphics being wisely deleted. For the actual delivery, the stiff-backed typescript is placed "à la piano" on the lecturn and, talking just over the top, the speaker can keep one eye on the audience for any reactions and the other on his paper. The advantage of this procedure for lip readers is obvious—the more-elderly foundrymen being notoriously hard of hearing (something to do with dust, it is sometimes alleged, though in a foundry a deaf ear can be advantageous!).

Hints for Speakers

Quite a number of long-anticipated and informative practical lectures have "died early on" because the speaker had a poor delivery and knew not how to keep his audience awake. Would it not be an excellent idea if aspirants to the presidency of local societies could have a grooming session on *ad captandum vulgis* (interpreted, roughly, as how to capture the crowd); how to stand up, speak up, and shut up; and in addition, he might be given a discreet list of "don't-do-its."

The present writer has many occasions behind him when he was a long-suffering listener and not a few years' experience as a speaker, so it is hoped that a few words or "hints on spouting" may not come amiss. Such guidance could have effects on the attendance and enthusiasm shown at meetings, where all types of speakers show up in turn to serve the cause of progress and evolution.

One never-to-be-forgotten type of speaker is the artificially modest little man who talks through his teeth from regions below; he usually has his paper flat on the table and addresses his monotone to it. Every time he looks up, he loses his place and his audience. Such a speaker sits down to thin courtesy applause, is the despair of the reporter and no help to the lip readers. It should be made compulsory for him to issue a hand-out of his speech before the meeting!

Another type of author starts in the middle of his subject-matter. Supposing his title is "Blast," straightaway he assumes one and all present knows what produces it and why! He shows a few slides with columns of tiny figures, sometimes well out of focus on the slide to start with, and made worse by spherical aberration on the screen. An experienced lanternist should always be called in to advise on slide production; if he is a foundryman and it is a meeting of members of that ilk, he will be well aware that the older members of the fraternity are notoriously short-sighted. (This disability is said to have something to do with glare, and can be useful at scrap "inquests.") This second type of speaker sometimes turns around and talks *sotto voce* at the screen for two minutes. When he comes back, he has a drink of water, and it transpires that he's lost his place. Even those present at the beginning, not to mention latecomers, are never quite sure at the end whether the paper is on hot-blast, cold-blast, or shotblast.

Blinding with Science

Then, there is that spellbinder, varsity-style speaker, the real "Hyde-Parker," with degrees in English and his tripos. His every sentence is beautifully polished and put over with well practised and modulated diction. Every now and then, he uses a change of slide to jolt any flagging listener back to full alertness. If the lecture is on, say, "Metals in Harness," the scientist's photomicrographs, etched in "so-and-so," are both weird and contemporary, and appear all the same to the rammers-up and loose-pattern moulders among the audience, who are "stone cold" about the signs of the Zodiac and square rooting, however symmetrically they may be drawn on the blackboard. For a speaker to mess about with a slide-rule in front of the older members of the audience is particularly noxious; who knows, they may be illiterate anyhow!

What can be done about that rabid "I-itis" speaker, with "I, personally myself"; "me" or

"*Mr. Chairman and Gentlemen . . .*"

"my" at every verse end? There is no mistaking who his subject is. When you weigh them up, there is nothing very definite when he uses such phrases as: "something of the order of, shall we say," "in all probability," "for obvious reasons," or "it should be"; yet many authors adopt this style, perhaps to bluff their audience or to cover ignorance of the real state of affairs. We know comparisons are odious, but "big" and "little" mean nothing by themselves. It's irritating for a 30-ton-per-casting man to listen for an hour to an account of the making of a large casting only to find that the author's "large" is but 30 cwt. and seems big to him because his usual scope is 30 lb.!

Finally, to take one more from many familiar types of speaker, there is the "school teacher," who treads pigeon fashion every now and then across to the blackboard, and rolls the chalk between the palms of his hands continuously; it is wondered if he ever drops it! Distracted by such mannerisms, "Ye heareth not a word he sayeth."

As "Rabbie" so pointedly put it, "Oh wad some Power the giftie gie us, to see oursel's as ithers see us."

New Master Patternmaking Shop

Because of the requirements of Birmingham's town-planning scheme, the master patternmaking firm of Fellows & Darby, Limited, whose works for over 60 years were in Slaney Street, were obliged to discover new premises. They were indeed fortunate in finding, quite nearby at Hampton Street, Birmingham 19, an excellent building which was formerly an engineering works. It is a well-built construction, carrying a very dignified aspect of late-Victorian architecture, with large windows ensuring excellent interior lighting. The building itself takes the form of a hollow square, the internal yard again helping with natural lighting. This yard, into which lorries can enter, carries a double garage over which there are several workrooms used for development work—the present interest being in the epoxy-resin processes of patternmaking.

At the right-hand side of the yard, occupying two storeys, is the wood patternmaking part of the business, whilst opposite is the metal section, housed in a well-equipped machine-shop. At the back of the yard, the two sections are connected by a workshop, carrying a gallery. In this area of the work, close to the wood patternshop, a heavy miller is installed as here the ground is suitable for heavy foundations. Over the offices, there are two large workshops, which will give ample space for future developments. In the corner of the yard on the patternmaking side there is a roomy goods lift, servicing not only these two floors, but also the first-floor patternshop.

Machinery and Plant

At the entrance to the works, and conveniently situated, is the timber store. It is suitably heated for seasoning timber and houses a cross-cut saw, so that a minimum of wood need be taken from storage for each job in hand.

The heavier jobs are handled in the ground-floor patternshop. The benches, which are of a standardized design and all placed by windows, carry swivel lights. The machines are so placed as to ensure a proper flow of the work, whilst leaving plenty of space in the middle for building large patterns. The shop is fully equipped with modern Wadkin machinery and is capable of producing all types of patterns. The second floor has much the same lay-out, but there is a larger number of benches—one to each patternmaker—arranged along the walls. The shops are all well lit, with strip lighting in addition to bench lights.

As Birmingham is such a hive of industry there is no need for the master patternmakers to instal their own melting shops, as there are always a few reliable foundries within a short distance, capable of giving a quick delivery of pattern castings. This service, coupled with an efficient and well-equipped machine-shop, ensures the rapid making of metal patterns.

The new works, which had only been occupied a little over a month at the time of the writer's visit, was seen in full production, but there are still quite substantial modifications (and redecoration of the offices) to be carried out.

Background

The firm, which was established in 1895, was converted into a limited-liability company some 40 years ago. In 1957, William King (Birmingham) Limited, a very old master patternmaking concern established in 1885, was acquired. The first ledger of that firm, covering the years 1885 and 1886 shows that for the most valuable order listed the bill amounted to six pounds, paid in three instalments, whilst at the other end of the scale there was one for threepence!

The writer thanks Mr. B. G. Darby for the help accorded to him in the preparation of this article and wishes the new venture every success.

JOHN LEWIS & SONS, LIMITED, the Aberdeen shipbuilding firm, has acquired a "substantial interest" in the Montrose shipyard, it was reported recently to the local town council. The company plans to build two trawlers at the Montrose yard, which was threatened with closure owing to lack of work.

TO ALLEVIATE THE ANNOYANCE caused to genuine travellers who are refused sleeping-car berths because of advance bookings which are not used, the British Transport Commission announces that after February 1 reservations for berths on British Railways will be permitted only on full payment for the berths.

Equipment & Supplies

Exothermic Gas Generator

Controlled-atmosphere furnaces are now being applied to malleablizing furnaces, as well as for the heat-treatment of steel. A protective-atmosphere generator has been developed by Royce Electric Furnaces, Limited, of Walton-on-Thames. It has a rated output of 150 cub. ft. of prepared atmosphere per hr., and occupies a floor area of less than 3 sq. ft. (Fig. 1). Larger units with capacities of up to 2,000 cub. ft. per hr. are also available.

The prepared atmosphere, known as exothermic gas, is obtained by the controlled combustion of town's gas. The products of this combustion are cooled to separate the excess water vapour, and then cleansed of sulphur and passed direct to the heat-treatment furnace, the volume of atmosphere produced being governed by the degree of combustion permitted in the combustion chamber. With partial combustion, as required for instance in the bright annealing of steel, the yield of atmosphere is approximately three times that of the raw gas burnt, and the total electrical consumption is less than 150 watts per 100 cub. ft. of atmosphere. The combustion chamber is lined with high-quality refractory, and specially constructed with refractory baffles to give the requisite temperature and turbulent flow. To conserve heat and give temperate working conditions, the lining is backed by a wall of thermal insulating bricks, the whole being enclosed within a gas-tight casing. Each unit is completely assembled as a packaged unit on a floor-mounting baseplate, and tested before leaving the factory.

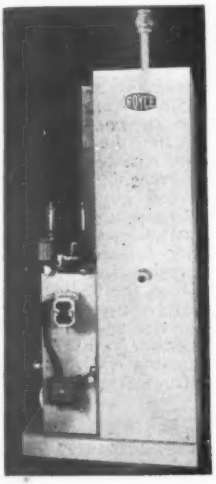

FIG. 1.—*Exothermic gas generator, marketed by Royce Electric Furnaces, Limited, of Walton-on-Thames.*

DELSEN CORPORATION, of 719, West Broadway, Glendale 4, California, have produced a new variable-ratio resin-dispenser for use with most two-component liquid-resin and hardener systems. By means of a simple lever adjustment, the ratio of resin to hardener may be varied over a wide range. It is available in both hand-operated and motor-driven models, and may have some application to the manufacture of resin patterns.

NEWMAN INDUSTRIES, LIMITED, Yate, Bristol, have introduced a new range of totally-enclosed motors, ½ to 2 h.p., in "66" frame dimensions (BS.2048 and NEMA Standard MG.1). This new range has been designed to bridge the gap, practically and economically, which usually exists between low horsepower motors, and the smallest of the industrial-type motors. Its introduction means that Newman can now offer a complete range of motors of from 1/12th to 600 h.p. to NEMA standards.

Law Cases

Failure to Wear Mask—Contributory Cause of Death

The danger for men who work in factories where dust is prevalent in the atmosphere and yet do not wear masks, was emphasized by Mr. F. C. Playne, Deputy Coroner for North Worcestershire at the inquest, held at Kidderminster, on Mr. Albert Leighton (69), retired moulder.

Mr. Albert Bingham, works manager at the general engineering firm which employed Mr. Leighton, said goggles and masks were available, and notices to this effect had been put up in the works, but it was not made compulsory for the men to wear them. He added that in the dusty shops most of the men did wear masks.

Recording a verdict that death was due to the industrial disease, silicosis, Mr. Playne said: "There was no suspicion that the work Mr. Leighton was engaged on was undermining his constitution. It was clear in the type of work this man did there is some risk of the loose sand from the moulds he was making and breaking up, getting into the lungs and eventually causing this industrial disease which was a contributory factor in his death. It is also clear that the management have available masks and goggles which these men can wear if they so desire. But it is notorious that the British workman will not protect himself even when measures are given for him to do so, and it seems unlikely that Mr. Leighton ever wore a mask."

A repercussion from the inquest is that the Kidderminster branch of the Amalgamated Union of Foundry Workers is asking the national executive to send to the Home Secretary a copy of a letter which it issued on January 13. The letter criticizes comments made by the Deputy Coroner, Mr. F. C. Playne, in particular those referring to the allegation that "the British workman will not protect himself even when the means of doing so are provided." The letter, over the signatures of Mr. H. B. Preston, Kidderminster branch secretary of the Union, and Mr. C. F. Hill, chairman of the branch, alleges that the evidence given at the inquest gave a wrong impression. The statement says, "We fail to see how an enquiry can be said to have been fully and fairly conducted when evidence is given only on behalf of the employers. Surely representatives of the employees should have been invited to give evidence," and adds "The sweeping remarks of the Deputy Coroner are to be regretted."

Plaintiff 50 per cent. to Blame

Former crane driver at the Glengarnock Works of Colvilles, Limited, Mr. James Reid (41), sued the company for £6,000 damages for injuries sustained in an accident at the works. He lost the greater part of his right hand in the gear wheels of a crane which he was greasing while the gears were operated by a workmate at his (Reid's) shouted instructions.

Awarding plaintiff £2,010 damages, Lord Guthrie in the Court of Session, held that Colvilles failed to maintain a safe system. Such an accident would have been prevented by a secure fence around the gear wheels and the grease could then have been safely applied in liquid form through a hole in the fence. But, said the judge, the plaintiff himself had been guilty of a breach of the Factories Act by doing something which was likely to endanger himself. His act in fettling the pinion wheels with the help of a workmate was a deliberate breach of the instructions as well as of correct practice.

He assessed total damages at £4,020, comprising £1,500 for pain and suffering, £520 for loss of wages, and £2,000 for future loss. He found the plaintiff 50 per cent. to blame.

E

Safeguarding National Insurance Stamps

National Insurance stamps are now such expensive pieces of paper that the directors of even the smallest firm must fear the theft of stamps and cards. In what follows a special correspondent outlines the several ways in which the risk of financial loss can be reduced.

The proprietor of a small east-London firm writes: "We have seen reports in the popular Press that there is to-day a sizeable market in used national insurance stamps, and we would like to know what would be our position if our offices should be broken into and our safe removed (as was done some 18 months ago) and we found that we had lost the whole of our stock of national health cards and stamps." Well, he would certainly be in trouble, for without any sort of proof that the cards were stamped and that unused stamps were in the safe there would be extreme difficulty in persuading the Ministry to make a refund, and not to require the cards to be stamped again—at the employers' cost.

However, there are methods of avoiding what might, for some companies, be a disastrous situation. The first is by use of form P.325B, obtainable from the Post Office, which has columns listing the various types of postage and national insurance stamps required, the total cost and details of cash tendered. If this form is properly completed (in duplicate) when buying stamps, the Post-Office counter-clerk will certify a copy to the effect that the stamps ordered have, in fact, been bought. The forms can then be filed and will, in normal circumstances, be accepted as proof that the employer has gone at least most of the way towards fulfilling his obligations. In this case it is unlikely that there will be a demand for replacement insurance cards to be stamped again. This system can be reinforced by paying for insurance stamps by cheque, for which arrangements have to be made in advance, but the Post-Office chiefs are usually quite prepared to co-operate.

Alternative Systems

An alternative system to the use of adhesive stamps is to hire machines for impressing stamps on cards by means of metallic dies. Such machines are obtainable (*via* the local Ministry office) with a separate meter unit containing a die corresponding to each of the various values of stamps. Each meter registers how many impressions have been made. A minimum annual fee of £1 10s. for the use of one or two meter units and 15s. for each additional unit is charged, and Ministry permission is required before this system can be adopted.

Under this scheme each machine franks only one class of stamp—so an employer with a large staff would probably require up to six machines, and it is necessary to pay *in advance* before the cards can be stamped. The machines, which are fairly small affairs, are taken along to the local Ministry office where they are set to frank the required number of card squares, and the employer hands over a cheque for the total sum. Use of these machines can certainly reduce loss, for a franked card is of little or no use to a thief and, even if the cards are stolen, the Ministry has a clear enough record of the number of impressions bought over the months. Another advantage is that there are no loose insurance stamps lying about the office and safe.

For Larger Firms

Other methods, mostly of interest to larger employers, include the direct payment-invoice scheme by which employers with at least 250 employees may, subject to certain conditions, pay contributions by cheque. Contribution cards continue to be used but are not stamped, and at the end of their currency, the cards are noted with the number of contributions paid, and sent to the local Pensions and National Insurance Office. The employer completes an invoice showing bulk entries for groups of cards on which the same number and rate of contributions have been noted as paid.

The employer may, as an alternative to the use of an invoice, submit the cards to the local Pensions and National Insurance Office with a schedule showing particulars of the individual employees and of the contributions which have been noted on their cards. Employers with 50 or more regular employees may be permitted to stamp at yearly, half-yearly or quarterly intervals. This is subject to conditions, which include the payment in advance by cheque, at weekly or longer intervals, of the amount of the contributions due in respect of the employees concerned; special stamps representing up to 13 weeks' contributions are provided as part of this arrangement.

Arrangements may also be made for permitting an employer, with 50 or more employees, to stamp after payment of wages, but this involves payment of a deposit to the Ministry.

Technical College Teachers' Training

The Wolverhampton and Staffordshire College of Technology has been added to the list of technical teacher training colleges offering, next summer, a ten-week course of full-time training in "the principles and practice of teaching." Hitherto, such courses have been offered only by the three recognized training colleges at Bolton, Huddersfield and London. The courses, available to both day and residential students, are designed for teachers in technical colleges who have taken up appointments with prior teacher training. Subjects covered will be science, engineering, building and commerce. A memorandum from the Ministry of Education asks technical college authorities to release staff on full salary. Tuition will be free and travelling expenses will be payable. Application for further details should be made to the Wolverhampton and Staffordshire College of Technology, Wulfruna Street, Wolverhampton.

Restrictive Trading Agreements

Agreements registered with the Registrar of Restrictive Trading Agreements by the end of 1958 totalled 2,100, and during the year 1957/58 it was decided that 140 of these should be referred to the Restrictive Practices Court. Although a number have since been abandoned for divers reasons, proceedings were formally instituted in over 50 cases, two of which were heard by the Court in 1958. Dates were fixed for the hearing of seven more early in 1959.

The two cases already heard by the Court were those of the agreements of the Chemists' Federation and the Yarn Spinners' Association. June 22 is set as the date on which the case relating to the Associated Manufacturers of Domestic Electric Cookers will come up for hearing.

"Britain's Future and Technical Education." It is reported that the booklet bearing this title (reviewed in the JOURNAL of January 1) can only be obtained from the Ministry of Education, Curzon Street, London, W.1, and not from HM Stationery Office as was indicated in the review.

American Letter

New England Conference

"Modernization and Profits" was the theme of the 18th New England Regional Foundry Conference, held October 17 to 18 at Kresge Auditorium, Massachusetts Institute of Technology, Cambridge, Massachusetts. Summaries of the papers presented are given below:—

Utilizing Latest Developments in Moulding, Core-making and Casting Processes for Increased Profits, by Alfred B. Steck (Metallurgical Associates Incorporated, Boston). Numerous new developments in the foundry industry enable foundrymen to produce better and cheaper castings now. These developments have been made in nearly all sections of the industry, and each foundry should use those applicable to its own operation to increase profits, by reducing manufacturing costs, and increasing sales.

Production of High-quality Aluminium Sand-castings, by William B. Corcoran (Draper Corporation, Hopedale, Massachusetts). Draper's aluminium foundry regularly attain the following properties in unchilled test bars in the T6 condition:—tensile strength 41,000 lb. per sq. in.; yield strength 31,000 lb. per sq. in.; elongation 4.6 per cent., and brinell hardness 86. The 355, and 356, alloys are melted in propane-gas-fired No. 100 crucible furnaces, the charges being weighed accurately, and remelting carefully controlled. Degassing is done with chlorine pills, and the metal is poured into square basins situated close to the pouring spout. In the mould, the metal flows into the cope runner through a strainer, the mould sand being a synthetic mix of 130 fineness. Properties of chilled bars and castings average as high as 45,000 lb. per sq. in. tensile strength, 32,000 lb. per sq. in. yield strength, and 7 to 8 per cent. elongation.

Gating and Risering, by Thomas Kiley (Meehanite Metal Corporation, New Rochelle, N.Y.). Many factors contribute to effective gating practice, including pouring-basin design; size and location of sprue, runner bars, and ingates, and use of skim gates and strainer cores. The following steps are necessary when gating:—(1) Decide whether the casting is to be poured fast, medium, or slow; (2) determine poured weight of the casting; (3) determine time required to pour; (4) select sprues to give the desired pouring speed; (5) provide suitable dirt traps and chokes, and (6) distribute the ingates properly. Risers must be used in the required sizes and places to ensure adequate feeding.

Application of Shell Cores—Interest to All, by Earl Jahn (Shell Process Incorporated, Chicopee, Massachusetts). Shell cores are accurate; they do not sag or fin. Gas evolution is low, and no core vents are required. The strength of shell cores is such that breakage is extremely slight, and their lower weight means easier handling. Intricate cores can be blown denser at lower blow pressures, and coresetting is simpler, rejects due to shifted or sagged cores being rare. Cores can be made close to the moulding line and used immediately, and less floor space is required. The required sand mix can be determined weeks ahead, and can be moved easily. As little as 2 per cent. resin can be used in some cores. Disadvantages of shell cores include:—the need to learn how to coat sand; the cost of cast-iron coreboxes; impracticality of the shell process for short-run production, and the need for gloves when handling hot cores.

Pattern Construction and Rigging—Improved Techniques in Coreblowing, by Richard L. Olson, (Dike-O-Seal Incorporated, Chicago). A new technique for avoiding fins on castings has achieved tight abutment of cope and drag by the use of rubber strips, 0.005 to 0.010 in. thick, on the bearing surfaces of flasks.

Repair and Salvage of Non-ferrous Castings, by E. Frank Tibbetts (Wollaston Brass & Aluminum Foundry, Wollaston, Massachusetts). Some major types of salvage involve impregnation and welding. Impregnation should be used when dealing with slight porosity, which causes seepage, but not for gross shrinkage. Flow welding should be used when the foundry knows the full extent of the defect. Each non-ferrous metal presents its own problem, and requires an appropriate welding technique.

Modern Sand in the Mould, by Thomas E. Barlow (International Minerals & Chemical Corporation, Skokie, Illinois). Laboratory tests on sand must be intelligently interpreted and the interpretation correlated to foundry practice. Each foundry should do only those jobs which suit its sand, the best type of mould being one which is hard, and uniformly rammed.

Foundry Practices for Naval Castings, by William Baer (Bureau of Ships, Washington). Gross shrinkage is the greatest problem in Naval bronze castings, since castings in which it occurs cannot be impregnated, and then used. Foundrymen must try to benefit by experience, and by using the material published to help them.

New Core Processes, by Anton Dorfmueller (Archer-Daniels-Midland Company, Cleveland). Recent new processes for coreshop application include the CO_2, air-setting, shell-core, and complete air-setting, processes. Their application, and the problems involved, are of major importance if they are to be of benefit to foundries. Major applications for the CO_2 process are medium-sized, low-production cores, particularly for aluminium, magnesium, and certain difficult steel castings. The shell-core process is suitable for high- and medium-production core work, particularly when complex design or close dimensional tolerances are required. The air-setting process has found wide acceptance, especially in heavy work, and can be applied basically to any core for which normal fabrication time would exceed half an hour. The new air-setting binders, which are designed to eliminate baking completely, are being introduced on a limited scale at the present time. They are used for the same applications as conventional air-setting-binders, and can also be used as a mould facing where dry-sand facings are normally required.

Profit Dollars that slip Away, by Joseph B. Stazinski (Elmira Foundries, General Electric Company, Elmira, N.Y.). Foundrymen should keep up with new developments, and changes in equipment, methods, and materials should be made when necessary and justified. Change is not always the only answer to a problem; improved practice and control may be the solution. Manpower should not be wasted; discipline must be maintained; work standards must be set properly; human relations should be good, and safe operation ensured.

BLACKBURN & GENERAL AIRCRAFT COMPANY, LIMITED, Brough, Yorkshire, has gained two substantial RAF contracts for its newly-expanded engine division. There has been a very substantial increase to a previous initial order for the supply of Blackburn Artouste gas turbines to provide the auxiliary air-borne power plants being installed in Britain's V-bombers. There is also an order for low-pressure air trolleys to be used for starting the engines of the V-bombers. The numbers are not disclosed.

Metallurgical Abstracts

Behaviour of Certain Alloys Subjected to Dynamic Loading. R. G. CRUM and F. T. MAVIS. ("ASTM *Bulletin*." 1958. No. 231; pp. 88-91). The authors describe a versatile apparatus for making tensile-impact tests. The loading apparatus was a mechanical ram actuated by a loaded helical spring. A plunger was mounted inside the spring. It was guided by plates, which passed over the plunger, and by sleeve-struts bearing on the plates. End caps kept the sleeve struts from coming off the ends of the plunger. A rod was attached to one of the caps and to one chuck which held the specimen at the other end. The mechanism was held in a housing, this being fastened to the moving head of a universal-testing machine. The plunger could be pushed or pulled into a cocked position from either end and tripped by a release mechanism.

Each load cell consisted of four 500-ohm C-1, SR-4 electrical-resistance strain gauges cemented to a bar of titanium alloy, 0.5-in. in dia. The bar had a static proportional limit of 92,000 lb. per sq. in. and an elastic modulus of 15.5 by 10^6 lb. per sq. in. Strains were measured by two 120-ohm A-12, SR-4 electric-resistance strain gauges attached to opposite sides of the specimen.

After the load cells were calibrated statically, specimens of structural-grade steel, titanium and aluminium-alloys were tested statically and dynamically, at constant or slightly increasing velocity from impact to fracture in approximately 1.5 milliseconds. The dynamic modulus of elasticity for each material was the same as its static value. The specific yield stress of each material was greater for specimens loaded dynamically than for specimens loaded statically. The ductility of specimens of a given material was essentially the same whether the specimens were loaded statically or dynamically.

Non-destructive Testing. ANON. (*Steel.* 1958. Vol. 142; No. 25; pp. 110-2). In non-destructive testing six basic approaches are used, namely: (1) Resonance; (2) pulse-reflection ultrasonics; (3) eddy-current instruments; (4) radiography; (5) penetrants; and (6) magnetic particles. The resonance instruments measure thicknesses of 0.10 to 4 in. Laminations, gross internal voids, lack of bonds in brazed or clad materials, and variations of wall thickness can be detected.

The present-day versions use plug-in crystals and transducers. A 17-lb. portable instrument can check thicknesses up to 4 in. on a direct-reading scale. The pulse-reflection instruments are comparatively simple to operate. The "B-scan" presentation and immersion techniques, plus rapid scanning, make pulse-reflection application exceptionally broad. Eddy-current tests locate flaws and check physical properties. They use the variations in a coal placed around or near to a metal. One device measures conductivity within 1 per cent. without any specially-machined test-specimens.

There is a device for finding flaws in wire, rods, and tubing. The material passes through a coil while flaws show on a cathode-ray screen. The signal operates lights, marking devices, or gates for automatic sorting. Also, it can indicate two variables. The same principle can be used to check a variety of parts for composition and hardness. Many important developments of radiography are based on artificially-produced radioisotopes, such as Cobalt 60, Iridium 90, and Thallium 170. Penetrants and magnetic particles have been improved. With fluorescent penetrants, the emphasis is on materials and techniques to increase sensitivity for fine cracks, and comparatively wide, shallow defects.

Post-emulsification extends the variability range of defects. It uses a brilliant penetrant and the emulsifier is applied after the dye, left for a brief period, then washed with water. The potential of magnetic particles lies in automatic and semi-automatic applications, and magnetic fluorescent particles. Fluorescents in either oil or water suspensions show great promise. They are more brilliant and stable than their counterpart bonded to magnetic particles.

Contracts Open

The dates given are the latest on which tenders will be accepted. The addresses are those from which forms of tender may be obtained. Details of tenders with the reference ESB can be obtained from the Board of Trade Export Services Branch, Lacon House, Theobalds Road, London, W.C.1 (telephone: CHAncery 4411, ext. 738 or 771), unless otherwise stated.

HUDDERSFIELD, January 28—Supplies required by County Borough include cast-iron materials (12). Documents from Borough Engineer and Surveyor, High Street Buildings.

MERTHYR, February 7—Requirements of Borough Council for the 12 months commencing April 1, include iron castings (7). Documents from the Town Clerk, Mr. T. S. Evans, Town Hall, Merthyr Tydfil.

STOKE-ON-TRENT, February 2—Cast-iron work (I) required by Corporation for the 12 months ending March 31, 1960. Documents from the City Surveyor, Town Hall, Stoke-on-Trent.

CAERNARVONSHIRE, February 14—Supplies required for year commencing April 1 include gully grids and frames, manhole covers and frames. Documents from County Surveyor, County Offices, Caernarvon.

BOLTON, February 2—Supply of cast-iron gully gratings and frames, gullies and manhole covers (6). Documents from the Borough Engineer and Surveyor, Town Hall, Bolton.

SITTINGBOURNE, January 31—Cast-iron pipes to be supplied and delivered during the year ending March 31, 1960. Documents from the Engineer and Surveyor, "Lydbrook," 89, London Road, Sittingbourne.

CARDIFF, January 30—Cast-iron surrounds and hearths and burrs required by Public Works Department. Tenderers must be enrolled on the Queen's National Roll. Documents from the City Surveyor, City Hall, Cardiff.

HEREFORD, February 9—Materials required by City Council include iron castings (14). Documents from Mr. F. Margerison, A.M.I.C.E., City Surveyor, Town Hall, Hereford.

WARRINGTON, February 9—Highways, Sewerage and Planning Committee of the Council require supplies of cast-iron manhole covers and frames and gully gratings and frames (28) during the 12 months ending March 31, 1960. Documents from the office of the Borough Engineer and Surveyor, Town Hall, Warrington.

SOUTHWARK, February 4—Requirements of Borough Council include sewer cast-iron work (17). Documents from the Town Clerk, Southwark Town Hall, Walworth Road, London, S.E.17.

NEWCASTLE-UNDER-LYME, February 3—Castings (8) required by Borough Council. Documents from the Borough Surveyor, Lancaster Building, Newcastle, Staffs.

FEDERATION OF RHODESIA AND NYASALAND, March 3—Railway-wagon weighbridge with two platforms. (ESB/566/59.)

SOUTH AFRICA, February 6—Drawn vibrating roller. (ESB/498/59.)

ARCHIBALD LOW & SONS, LIMITED, brassfounders, Morkland Works, Glasgow, W.1, is having works premises erected at Kirkintilloch.

News in Brief

THIS YEAR the Carron Company, Falkirk, celebrates the 200th year of its foundation.

ON JANUARY 19, Metal Industries, Limited, removed to Brook House, Park Lane, London, W.1 (Telephone: HYDE Park 6770).

UNIVERSAL PATTERN AND PRECISION ENGINEERING COMPANY, LIMITED, of Crawley, have decided to shut down one of their two shops following upon a labour dispute.

THE FIRST AWARDS of Trevelyan scholarships have now been made by the Trust, and as a result 19 boys are to enter either Oxford or Cambridge University in October.

CONSTRUCTION HAS COMMENCED of the new research laboratory for the Cambridge Instrument Company, Limited. The new 20,000 sq. ft. building, overlooking the River Cam and Jesus Green, is scheduled for completion in June.

A FALL in the work available has resulted in British Railways calling on 128 men over 65 in the carriage and wagon department of its Swindon factory to retire at the end of February.

MANOR ENGINEERING COMPANY, LIMITED., Mansfield Road, Nottingham, held a dinner for 75 employees at the Mechanics Institute on January 10: this was followed by a visit to the Theatre Royal with the firm's directors.

MORE THAN 900 were present at the annual ball of the English Steel Corporation, Limited, held at the Cutlers' Hall, Sheffield, on January 9. Among those present were Lady Pickworth, wife of the chairman, and Mr. W. D. Pugh, managing director.

LAST FRIDAY, Mr. John Rodgers, M.P., wrote to over 50,000 firms in the United Kingdom and enclosed a leaflet about Government aid for the expansion of industry in certain areas, which are detailed. Whilst a few are in recognized industrial areas, most appear to be in coastal holiday resorts.

ACCORDING TO a preliminary estimate, Canadian steel production during 1958 declined from the 1957 figure of 4,920,000 tons to 4,250,000 tons—a fall of 14 per cent. Production during December, however, rose 23 per cent. compared with the comparable month of 1957. A total of 421,169 tons compares with 343,415 tons.

DAVID BROWN INDUSTRIES, LIMITED, held their annual luncheon for their 79 pensioners at Park Works, Huddersfield, a few days ago. The average age of the pensioners is 72 years, with an average of 33 years' service, whilst one man had a record of 54 years' continuous service. The attendance was an increase of 22 over the previous year.

WIDE RANGE OF RAW MATERIAL IMPORTS from the dollar area and from non-OEEC countries was officially freed by France from quota restrictions last week. The official list includes bars of aluminium, chrome, zinc, lead, molybdenum, and thorium, and (for the dollar area only) natural rubber, raw copper, etc. Not much change in the pattern of French trade is likely to follow this liberalization.

REDUNDANCY NOTICES are to be served before the end of this month on some 80 employees at the Allen Everitt Works, Smethwick, of Yorkshire Imperial Metals, Limited. The main product of the factory is copper tubes and, according to a spokesman for the company, there has been a substantial fall in the demand for such tubes in recent months. The firm has a redundancy policy agreed with the trade unions.

SAMUEL FOX & COMPANY, LIMITED, Stocksbridge, which employs 7,000 men, has experienced difficulty in securing 40 more men, of up to 40 years of age, for permanent work in the melting shops and rolling mills. Employment exchanges in Stocksbridge, Sheffield and Barnsley had failed to find the men. Following publicity given to this, a number of applicants were accepted for work, the vacancies then being reduced to 28.

THE FURNITURE EXHIBITION, organized by the British Furniture Manufacturers' Federated Associations, is to be opened, on January 28, by Sir David Eccles, M.P., President of the Board of Trade. As in the past two years, the exhibition will be divided into two sections—the ground floor will be open to the general public from January 28 to February 7, and the first floor will be open to trade buyers only from January 26 to February 5.

HENRY BALFOUR & COMPANY, LIMITED, Leven, are one of three British companies who have been granted licences to build commercial plant using a new process to produce gas from coal or oil, at home or abroad. The other firms are the Woodall-Duckham Construction Company, Limited, London, and Humphreys and Glasgow, Limited, London. A Gas Council spokesman said that the new process, developed in the Council's laboratories, could produce gas from low-grade coal and was therefore cheaper.

CLAY CROSS COMPANY, LIMITED, Derbyshire, has offered its railway, which carries limestone from Crich Cliff Quarry to their works at Ambergate two miles away, to Crich Parish Council for £5. George Stephenson founded the firm and built the railway. The offer includes a tunnel, two bridges and five acres of land. The railway is worked by gravity but after 100 years it was abandoned last year as being too expensive to run. The company now buys limestone from quarries at Matlock.

THE INSTITUTE OF METALS announces that the next meeting of the power metallurgy joint group of that Institute and of the Iron and Steel Institute will now be held on April 29 instead of March 12 as originally arranged. The meeting will be held at Church House, Great Smith Street, Westminster, London, S.W.1, commencing at 9.30 a.m., when a series of papers on the "Theoretical Aspects of Sintering" will be presented. In the evening, an informal conversazione will be held at the Institute of Metal's headquarters, 17, Belgrave Square, London, S.W.1.

JOSEPH LUCAS, LIMITED, has made a gift of £100,000 to Birmingham University to be used for building a hall of residence for post-graduate students in engineering. "For many years the firm has given generous financial support and valuable advice to the University in the engineering field, and especially in engineering production in which it enabled the University to establish a pioneer department in 1949" a statement from the University Council says, and adds "the work of this department is attracting an increasing number of graduate students, many of them from industry."

Mr. HAROLD HUMPHRIES, managing director of Hadfields, Limited, opened a two-day conference concerned with the promotion of sales activities and the extension of the scope for specialized markets for the firm's engineering products, at the East Hecla Works, Tinsley, Sheffield, on January 15. Twenty of the firm's sales executives and 16 outside members of the sales organization were present at the opening. Speakers included Mr. F. Cousans, a director, and Mr. George Wood,

News in Brief

also a director of the firm. Lord Dudley Gordon, chairman of the Hadfield group, was also present.

A SUBSIDIARY COMPANY, the Pressed Steel Société Anonyme with headquarters at Galerie Ravenstein 30, Cantersteen 7, Brussels, 1, has been formed by the Pressed Steel Company, Limited, of Cowley, Oxford, to represent the company in the Common Market countries. The directors of the new company are Mr. J. R. Edwards, Mr. F. E. Cairns, and Mr. T. M. Connelly, managing director, deputy managing director and patent attorney of the parent company respectively. Mr. Cairns has been appointed chairman and Mr. Connelly managing director of Pressed Steel Société Anonyme.

ABOUT 600 PEOPLE at the Soho Works, Smethwick, of W. & T. Avery, Limited, have been put on a four-day week as from January 12; a notice informing employees of the decision had been posted in the works. However, a number of skilled machinists, toolmakers, and patternmakers, will continue to work a full week. The company's decision is reported to be due to a general falling off in orders for weighing machines and scales. Since a number of men were made redundant at these works last year, shop stewards have been pressing for the introduction of short-time working instead of dismissals.

IT IS NO LONGER NECESSARY for engineering firms in Britain to import castings on either the ground of price or quality said Mr. F. N. Lloyd, chairman and managing director of F. H. Lloyd & Company, Limited, Wednesbury, when he addressed a New Year welfare party at the works. British castings are now the best, he said. Commenting on the fact that Lloyds had remained singularly free from major disputes "which beset this industry," he added, "I think that is because the works Council, which represents management and men, meets regularly. It is therefore very much easier to smooth out difficulties as they come along."

THE BRITISH INDUSTRIAL TRUCK ASSOCIATION is sponsoring a British candidate to attend the 1959 Materials Handling Course at Lake Placid, USA. The student will be taking up an award made under the terms of a memorial to BITA's first president, the late Mr. John M. Morris, which is valued at over £500. The memorial will take the form of an annual place at a suitable training establishment for someone who may benefit himself and his industry in the materials-handling field. With a view to selecting a suitable candidate, the Council of the British Industrial Truck Association has made an approach to industry and universities in Great Britain.

PROBLEMS OF REDUNDANCY and short-time working face three Coventry machine-tool manufacturers. Alfred Herbert, Limited, has decided to dismiss 57 workers in the main machine shop and is putting a number of others on short-time. The majority of the company's 3,000 employees is now working on a short-time basis. The number of redundant workers of Wickman, Limited, has been reduced from 60 to 28. 15 of whom received their notices on January 16. The remainder will leave on February 27. Another firm faced with short-time working is the Coventry Gauge & Tool Company, Limited, which has factories in Coventry, Madeley (Salop), Leicester, and Brechin (Angus).

BRITISH OXYGEN LINDE, LIMITED, has been awarded a contract for a tonnage oxygen plant worth nearly £750,000. The contract was placed by Humphreys & Glasgow, Limited, who are building Britain's first Lurgi pressure gasification plant for production of town's gas at Westfield, Fifeshire, for the Scottish Gas Board. The Westfield project will use oxygen and super-heated steam for the complete gasification of low-grade coal which is unsuitable for normal gas-making processes. The ultimate output of towns' gas will be 30,000,000 cub. ft. per day. The oxygen plant, which will be entirely of British design and manufacture, is being built by British Oxygen Engineering, Limited. It operates on the Tonnox internal compression system, and will be capable of producing 200 tons of oxygen per day; it is scheduled to go into production during the latter half of 1960.

BRITANNIA FOUNDRY, Lower Rushall Street, Walsall, which has belonged to the same family for three generations and is one of the oldest foundries in Walsall, has changed hands. The new owners of the foundry are H. Carter & Company who have been trading under the name of Carter Gameson Foundries, Limited, since December 1 last. The move is part of a plan to streamline the company's production, which specializes in aluminium castings and malleable iron work. The foundry was purchased by the Gameson family of Walsall from a person named Upfell, and the earliest date of any mention of it is 1883. It is believed, however, that there was an earlier foundry on the site for a considerable period. Some sources quote the date of origin as 1815. Thomas Gameson & Sons became a limited company in 1900, and still carries on in Dudley Street.

SIR W. G. ARMSTRONG WHITWORTH (AIRCRAFT), LIMITED, has stated that a £13,000,000 order for the military version of the 300 m.p.h. Armstrong Whitworth Argosy is likely to be placed in the near future by the Ministry of Supply for R.A.F. Transport Command. The company is already building ten civil versions of the aircraft and the first civil Argosy is due very shortly to make its first flight. Mr. H. M. Woodhams, managing director of the company, said that this support from the Government would be a great stimulus to the sales drive and would give valuable encouragement to sales overseas because many countries, notably those of the Commonwealth, follow the lead of the R.A.F. when a new type of aircraft is ordered. He added that the Argosy is to make its public debut at the Paris Air Show in June, and during the year demonstration tours will take it to many parts of the world.

Mr. A. J. Cox, general manager of the Birmingham Engineering Centre, has announced that the Centre has reserved about 800 sq. ft. of floor space at the British Trade Fair, to be held in Lisbon from May 29 to June 14, for economy-sized stands to be offered to about 25 firms from the engineering industry. The intention is to encourage small unit firms to participate in overseas trade fairs at a cost within their means. The grouping scheme used successfully at the Brussels World Exhibition last year, and also at various trade fairs on the Continent would, Mr. Cox said, bring down costs to between £40 and £175 compared with the minimum of approximately £500 which an individual stand would entail. The low-budget charges cover staffing and administrative services. The Centre is using the "economy plan" at the request of the Federation of British Industries which has planned the Lisbon Fair with the objective of meeting competition from Germany in this market. It has been estimated that Britain needs to gain a swing in trade worth between £5,000,000 and £6,000,000 to move ahead of Germany. A similar engineering group stand will also be included in a joint scheme with the Board of Trade in the Canadian National Industrial Production Show opening at Toronto in May.

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Supinol Core Binders will serve you faithfully at all times and will prove a special boon to you if high standards have to be achieved and maintained and if *costs* are important.

Supinol Core Binders are the result of constant scientific research and development, of strict laboratory and production control and of understanding foundrymen's needs and problems. In this age of science Supinol Core Binders play their rightful part.

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MANUFACTURERS OF

Scientifically developed and controlled Foundry Products

Personal

Mr. N. A. G. DANN has been appointed a director of Buck & Hickman, Limited.

Mr. R. A. BENT, has been appointed to the board of Lancashire Dynamo Holdings, Limited.

Sir DAVID ANDERSON, director of the Royal College of Science & Technology, Glasgow, is retiring at the end of the present session.

Mr. HARRY BULL, managing director of Brown Bayley Steels, Limited, Sheffield, has been elected president of the Sheffield Society of Engineers and Metallurgists.

Mr. K. A. ROBINSON, of Lancashire Dynamo Electronic Products, Limited, was, on January 1, promoted within the company to a new appointment as chief engineer.

Mr. FREDERICK ROBERT SIMMONDS, assistant secretary to the Austin Motor Company, Limited, Birmingham, since 1954, has retired after 40 years' service with the company. He is 65.

Advance Motor Supplies, Limited, one of the Sheepbridge Engineering group of companies, announce that Mr. G. N. FREETH is now branch manager at 18/19, Jennens Row, Birmingham, 4.

Sir WILLIAM SCOTT and Sir RICHARD BELLINGHAM GRAHAM have been appointed directors of Head Wrightson Teesdale, Limited, the largest subsidiary of Head Wrightson & Company, Limited.

Mr. W. D. CARTWRIGHT has been appointed field sales executive for Steels Engineering Products, Limited, Crown Works, Sunderland, and will be attached to the home sales director's staff in London.

Mr. H. A. HOBSON, representative in the Midlands for Parkinson & Cowan group of companies, has received presentations from the directors and his colleagues on retiring after 60 years' service.

Mr. H. COULTHURST, who for six years has been a director of H. J. & A. Coulthurst, Limited, engineers, Robert Street Foundry, Darwen, Lancashire, has retired after 56 years' association with the firm.

Mr. E. N. WENBORN, joint managing director of the Woodall-Duckham Construction Company, Limited, has been appointed a director of Woodall-Duckham, Limited, the parent company of the Woodall-Duckham, group.

Mr. WILFRID BROADBENT has retired from business and has resigned from the board of the Fairey Aviation Company, Limited, after 42 years' unbroken service. He was one of the original members of the board.

LORD RIVERDALE, of Arthur Balfour & Company, Limited, Sheffield, flew to Australia on January 20 and expects to be back in five or six weeks. This is Lord Riverdale's seventh visit to Australia and his fourth since the war.

Mr. VAL PAGE, chief designer of Ariel Motors, Limited, Selly Oak, Birmingham, is to retire after 50 years in the motor-cycle industry. He is 67. For many years he designed J.A.P. engines and at one time machines fitted with such engines held 23 world records.

Mr. GEORGE WILLIAM RILEY, has retired from the boards of George Scott & Son (London), Limited, and Ernest Scott & Company, Limited. He will, however, continue to serve the companies as technical consultant. Mr. Riley retires in his 60th year of continuous service with both companies.

Mr. F. V. PIPE, chairman and managing director of Newton Brothers (Derby), Limited, electrical engineers and manufacturers, Derby, has resigned from the chairmanship, but will continue to hold the position of managing director. Mr. GUY SMITH, vice-chairman of the company since 1956, has been appointed chairman of the company.

Mr. R. A. RIDDLES, deputy chairman of Stothert & Pitt, Limited, has been appointed chairman. He succeeds Sir LLEWELLYN SOULSBY, who has been chairman since 1946 and has resigned this position to devote more time to his other interests. Sir Llewellyn will continue as a director. Mr. T. W. Y. ALDERTON has been appointed a director.

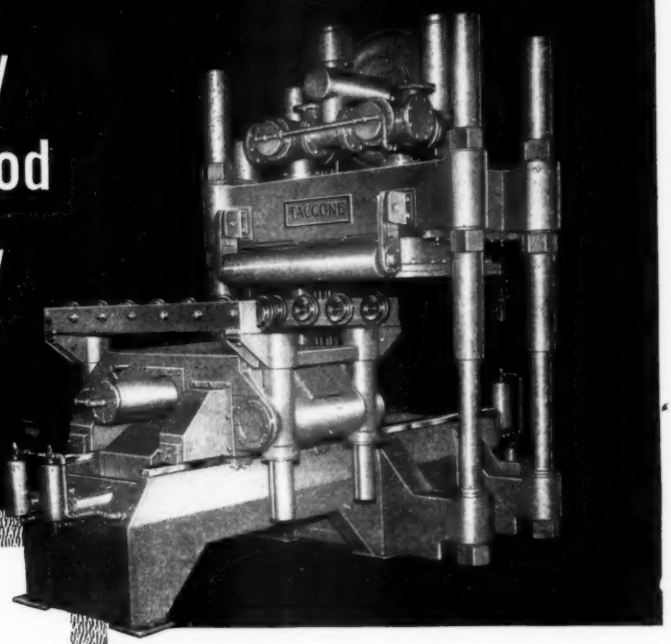
Lieutenant-Commander R. B. LAKIN has been appointed a special director of Vickers-Armstrongs (Engineers), Limited, and deputy general manager of the Elswick Scotswood and Wakefield Works of that company with effect from February 1. He will relinquish his seat on the board of George Mann & Company, Limited, a Vickers subsidiary, on January 31. Colonel H. S. J. JELF has been appointed a director of George Mann & Company. He has also been appointed managing director of that company with effect from February 1 in succession to Lieutenant-Commander Lakin.

Hinckleys, Limited, of Sandiron House, Beauchief, Sheffield 7, announce that Mr. HORACE L. BLAKE, Mr. ROBERT P. WALL, and Mr. CYRIL HOULDSWORTH, have all completed 21 years' service with the various associated companies. All three were presented with a silver salver and, in addition, 21 premium bonds to commemorate the occasion, the bond numbers being inscribed on the salvers. These presentations, were made at the "End of Year Parties" at the respective works, and at one the opportunity was taken to present Mr. ALLAN EVANS of the head-office staff of Hinckleys for many years—approximately 30 in all—with a silver salver and premium bonds for his service on the production side of the business.

Two new appointments have been announced by the Scottish area board of the British Transport Commission. Mr. G. L. NICHOLSON, assistant to the general manager, has been appointed divisional traffic manager-designate to the Glasgow and south-west division, and Mr. J. M. FLEMING, district goods manager, Glasgow, has been appointed traffic manager-designate to the East coast division. Mr. Nicholson's headquarters will be in Glasgow and Mr. Fleming's in Edinburgh. These appointments-designate are the first steps in a scheme of reorganization designed to decentralise departmental management from regional headquarters down to a divisional level, where commercial, operating and motive power activities will in due course be combined.

Mr. J. F. STANIER, president of the National Trades Technical Societies, and former chairman of the Renishaw Iron Company, Limited, has been appointed chairman of Sheffield and District Hospitals Council's Management Commitee in succession to Dr. J. CLARK, who did not seek re-election. Mr. Stanier, who is an executive member of the British Iron and Steel Federation's training department, has been on the Hospital Council's Management Committee since 1950. Mr. H. E. McGee, a director and works manager of Easterbrook Allcard & Company, Limited, Sheffield, and a member of the Council of the Sheffield Chamber of Commerce, has been appointed deputy chairman in succession to the late Mr. PERCY MALBY. Among additional members co-opted to the Committee is Mr. P. V. CARPENTER, welfare officer, Kayser Ellison & Company, Limited, Sheffield.

An entirely NEW method of Foundry Moulding



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'TACCONE' HIGH PRESSURE DIAPHRAGM MOULDING MACHINE

The 'Taccone' machine makes precision green sand pressure moulding available to every foundry. It ensures sound, accurate castings and the moulds it produces are superior to those made by conventional equipment. 'Taccone' moulds are consistently hard and uniform throughout and can be effortlessly produced by unskilled labour

All types of pattern equipment, including plaster wooden, plastic and metal patterns can be used, and there is practically no limitation on the size of flask employed. 'Taccone' machines are handling flasks 8it. by 8ft. (larger sizes are envisaged) and already over 200 'Taccone' installations are in operation.

The dimensional accuracy and finish on the castings is comparable with work produced by shell moulding techniques.

The 'Taccone' is more than a machine, more than a process—it is a revolutionary system for rapid mould production.

Ten standard machines are available in the manufacuring range and special machines can be built to any size for any purpose.

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Foundry Machinery Division

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Company News

LEYLAND & BIRMINGHAM RUBBER COMPANY, LIMITED —The directors announce that there will be a two-for-three scrip issue to holders of February 13. They state that investments in subsidiaries have been revalued and show a surplus of £707,796.

BROOM & WADE, LIMITED, manufacturers of air compressors and pneumatic tools, etc., of High Wycombe (Bucks)—Group profits at £569,434 (£566,046) show little change in the year ended September 30, 1958, and an unchanged final dividend of 10 per cent. again makes a 12½ per cent. total. On this occasion a first interim of 2½ per cent. is declared for the current financial year. With a heavier tax of £306,259 (£281,059), the net profit becomes £263,175 (£284,987).

A. E. GRIFFITHS (SMETHWICK), LIMITED, manufacturers of industrial ovens and tanks, etc.—The company is repeating the interim dividend of 7½ per cent. in respect of the year to March 31, 1959, although the current half-year's trading yielded an appreciably less favourable result than that shown for the same period last year. The directors believe it will be possible to keep this year's dividend at the same level as last year (22½ per cent. total), but from the present position of the order-book it is unlikely that there will be any considerable improvement before the end of the year and the indications are that the net profit for the full year will be substantially less than that for the previous year.

A new offer for the £495,000 share capital of KITCHEN & WADE, LIMITED, manufacturers of drilling, boring, and honing machines, of Halifax, has been announced by the ASQUITH MACHINE TOOL CORPORATION, LIMITED. The previous Asquith offer of one 5s. ordinary for every two Kitchen & Wade shares, plus 2s. cash per share, was rejected by the Kitchen & Wade board.

The new offer, which is subject to approval of the necessary capital increase and Asquith's announced 100 per cent. free scrip issue proposal, is of five ordinary shares of 5s. and 5s. in cash for every four Kitchen & Wade 4s. ordinary. Kitchen & Wade holders would be allowed to retain the 2s. 6d. per share return, subject to court sanction, proposed by their directors. The offer will be conditional on 90 per cent. acceptance, or such smaller percentage agreed.

For the year ending September 30, 1959, Asquith Machine Tool Corporation expects to be able to pay 15 per cent. on the capital increased by both issues. Kitchen & Wade has declared 18¾ per cent. so far for the year to March 31, 1959, and anticipates a further payment of not less than 6¼ per cent.

New Patents

(Copies of complete specifications are obtainable from the Patent Office, Sales Branch, 25, Southampton Buildings, Chancery Lane, London, W.C.2, price 3s. 6d.)

801,579. National Lead Company, 111, Broadway, New York, 6, N.Y., USA.

Moulding sands used in the casting of metals. The composition has a green-compression strength of at least 2.4 lb. per sq. in. It consists of sand and minor quantities of a grease-thickening agent (*e.g.* a soap or organophilic organic-treated colloidal silicate), and of a liquid lubricant, which will be gelled by the thickener.

801,819. B. J. Franklin, 58, Saunders Street, Yeoville, Johannesburg, S. Africa.

This patent describes what is claimed to be a continuous casting machine which is more versatile and adaptable than existing machines.

801,855. J. S. Hoekstra, 's Gravendamseweg, 16b, Noordwijkerhout, Holland, and H. J. M. Verschure, Cliostraat 46, Amsterdam, Holland.

A machine for the manufacture of shells for the shell-moulding process and means for controlling this machine.

801,931. Karl-Paul Cassart, 52, Avenue du Roi Soldat, Brussels, Belgium, and Leon Schmit, 183, Avenue Milcamp, Brussels, Belgium.

A process for the manufacture of sand and zircon cores and moulds for foundry purposes. This invention is concerned more particularly with improving the binding power of drying and semi-drying oils, paraffins and paraffin oils, natural resins and any mixture of one or more of these materials. They may, or may not, be treated beforehand by drying agents, by blowing or by simple heating. This is achieved by the use of sodium chlorite as an oxidizing product, which is incorporated into the sand just before use: setting time can thus be regulated at will.

Obituary

SIR CLAUDE GIBB

Sir Claude Dixon Gibb, for many years chairman and managing director of C. A. Parsons & Company, Limited, and chairman of A. Reyrolle & Company, Limited, collapsed and died suddenly at Newark Airport, New Jersey, when on a business visit to America. Sir Claude, who was born 60 years ago in Australia, spent the whole of his working life in this country. He started as a fitter in Parsons' engineering shops and worked his way to the top. He took a great interest in foundry practice and after the last war was responsible for creating one of the finest mechanized works in this country. It is very sad that just four days after his death he was to have been presented by the Institution of Mechanical Engineers with the James Watt gold medal, the Institute's highest award. His brilliant career was detailed in the JOURNAL'S personality feature, May 7 issue, 1953.

The death occurred on January 6, at the age of 82, of Mr. HENRY BERRY, who was for many years chairman of the Leyland & Birmingham Rubber Company, Limited.

Mr. JOHN STEVENSON NAISMITH, late works manager of Archd. Baird & Son, Limited, steelfounders and colliery engineers, of Hamilton, died on January 12. He was 73.

Mr. JOHN BRYAN, who until his retirement in 1950, was a foreman at Staveley Coal & Iron Company, Limited, in the foundry specials department, has died at the age of 74.

Mr. EDMUND JESSOP HOYLE, for twenty-one years a director of L. B. Holliday & Company, Limited, Huddersfield, died on January 8, at the age of 60. He had been with the firm for 36 years, starting as a works chemist.

The death has occurred of Mr. DAVID CLEWS YOUNG, a former general manager of the Motherwell Bridge & Engineering Company, Limited. He was 79. Mr. Young joined the company in 1901 as a draughtsman in the estimating department. In 1922 he was appointed general manager of the technical side of the business. He became a director in 1937. Mr. Young retired as general manager in 1946, but retained his directorship.

Electrical Aids in Industry

Data Sheet **No. 8**

Light-Sensitive Cells

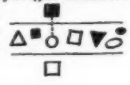
What are light-sensitive cells? They are devices which can sense and measure changes in the level of light or, in some cases, respond to the quality of light falling on them. There are various types of cell and each has its particular field of use. One of the best known is the photo-electric cell.

What can light-sensitive cells do? A change in the amount of light falling on the cell can cause a switch, relay or counter to operate. Alternatively, the direct indication of the light intensity can often allow some other factor to be determined and, if required, controlled. They are reliable and require little maintenance. Careful installation, as with all types of equipment, gives a good reward.

How can they be used? These cells have many applications in industry, for controlling processes, for inspection and measurement, for sorting material and for safety purposes:

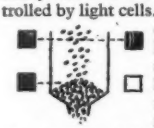
Counting

Where objects on a conveyor belt are too soft or light to operate a direct mechanical counting device, where they are too delicate or freshly painted to sustain physical contact or where the articles vary in size, a light-sensitive cell can be used. This counts the objects by interruption of an appropriately sited beam of light.



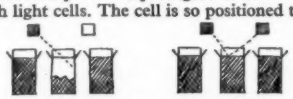
Hopper or Tank Level Control

Many forms of feed can be accurately controlled by light cells. One important one is for controlling the input to a hopper of fluid solids such as sand or peas. Here, two horizontal light beams are required: the upper, when interrupted, indicates that the hopper is full and stops the supply; the lower, when it ceases to be interrupted, indicates that the hopper is nearly empty and restarts the flow.



Package Content

The level of powder in packages can be checked with light cells. The cell is so positioned that



when the powder is up to the required level, the light reflected from the surface of the powder is picked up by the cell and causes the carton to be accepted. If not, it is rejected.

Colour Sorting

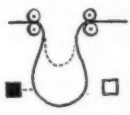
The quality of many articles can be gauged by their colour—seeds and nut kernels, for instance. The objects are fed into a tube by means of a vibrator pan and fall into the beams of three equally spaced light cells which scan them from all sides. If the object is acceptable it falls into a chute carrying it to one conveyor; if its colour is bad it is deflected as a reject.

Guillotine Guard

Light cells for guarding a guillotine or power press should be used only as a supplement to a mechanical guard or where the latter is impracticable. The interruption of a curtain of light by a hand stops the machine instantaneously.

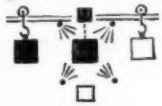
Press Feeding

Where the rate of feed of strip metal must be suited to a varying speed of acceptance by a press, a loop of the strip is allowed to sag between the feed and the press. When the loop reaches a predetermined depth a light beam is interrupted and the slack is taken up.



Processing Objects on the Move

Many articles are processed while on a conveyor line. For instance, where articles are to be sprayed while on the conveyor, the paint saved by stopping the gun between articles will make the device worthwhile. The same principle applies in a bakery to the spraying of baking tins with fat.



Automatic Door Opening and Closing

Doors can be caused to open or close by the interruption of a beam of light. This has its uses in such cases as control of doors on a heating oven or for the passage of vehicles in a factory. This is effected by a light beam on the side from which the approach is made (in many cases, both). When the approach beam is interrupted it opens the door which closes again after a given time interval.

For further information, get in touch with your Electricity Board or write direct to the Electrical Development Association.

An excellent series of reference books are available (8/6, or 9/- post free) on electricity and productivity — "Higher Productivity" is an example. E.D.A. also have available on free loan a series of films on the industrial uses of electricity. Ask for a catalogue.

Issued by the
Electrical Development Association
2 Savoy Hill, London, W.C.2

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Raw Material Markets

Iron and Steel

As for some long time past the foundries producing high-quality castings are comparatively much better off for work than other units and, although currently they are not so heavily engaged as they were, they are still able to obtain fairly good levels of production. The motor-car industry continues to be the major consumer and the engineering and speciality foundries catering for them are receiving indents for appreciable quantities of castings with prospects of increasing demands.

Although requirements for castings from many other trades have fallen, the needs of the heavy engineering, power and electrical equipment trades, agricultural implement manufacturers, machine-tool makers, steelworks, collieries, and others, all combine to provide the foundries with fairly good order-books. The machine-tool industry has not yet recovered its former level of business, and in consequence the foundries supplying to them are not so busy.

Comparatively, the engineering and speciality foundries are taking up much larger tonnages of pig-iron than other users, low-phosphorus irons being called for in appreciable tonnages, together with supplies of hematite and some refined irons. In all these grades present demands are below outputs, and most makers could book additional quantities if required. Some producers have found it necessary, on account of heavy stocks, to match outputs more to demands.

More work is badly needed by the light, jobbing, and textile foundries. Outputs at the majority of these foundries are much below capacity levels and many of them are on short time. Some of the light foundries continue to benefit by the increased business received from makers of domestic equipment, but demands from the building trades are disappointing. The call for high-phosphorus pig-iron is moderate, and, in addition to the inability to dispose fully of their makes, producers are carrying heavy stocks.

Some export business is being obtained in all grades of pig-iron. Much more could be supplied to overseas users if orders could be obtained, but competition is very keen and low prices are being quoted by producers abroad.

Most grades of scrap are still plentiful, although demands are maintained for arisings of heavy cast-iron and machinery scrap. Foundry coke deliveries are satisfactory and ganister, limestone, and firebricks are readily available.

The re-rollers continue to work on a hand-to-mouth basis so far as orders are concerned and they depend entirely on day-to-day arisings. Rolling programmes are difficult to formulate, and the small amount of work on hand necessitates frequent roll changing. The call for most products of the re-rollers is small, and for light sections and small bars demand shows no appreciable improvement. Home steelworks are in a position to supply promptly the requirements of the trade for steel semis, which at present forms only a small proportion of the potential outputs.

Non-ferrous Metals

Non-ferrous metal markets in London are quietly steady with the undertone firm. The outlook in the immediate months ahead for lead and zinc is dull; for tin it is fair, and for copper it can be said to be reasonably bright.

Copper in London is firm, activity is brisk, and with demand concentrated on cash supplies the backwardation widened. World copper statistics for December, 1958, released by the Copper Institute at the end of last week, initially unsettled the market, but subsequently were accepted as generally favourable. Roughly, the overall position is that, despite rising production in the United States, stocks are falling, whereas in the rest of the world both production and stocks are rising.

In so far as London is concerned, opinion is that with stocks now down to below 5,000 tons in LME warehouses and all-round sentiment good, the London quotation will have to rise if additional copper supplies are to be attracted. If this is the trend, the argument runs, it may well lead to a general rise in price of copper throughout the various world markets. In America the custom smelters are quoting 29½ cents and are now paying 24 cents a pound for scrap. There seems to be no move on the part of the producers to change their price of 29 cents a pound. Demand on the Continent is reported as satisfactory and the Belgian quotation has been raised in sympathy with London and in New York, the quotation being a shade over 29 cents a pound, Antwerp or New York.

The tin market in London continues to be subjected to bouts of brisk activity interspersed with days of featureless trading. However, demand is generally good and is apparent whenever the quotation sinks a few points. In the US the market is quietly steady with the price fluctuating between 99 cents and $1 a pound.

Lead continues to wend its featureless way in markets on both sides of the Atlantic. Demand at best can only be described as satisfactory, while, at worst, it is low enough to be disconcerting. In the US the price is 13 cents a pound. Zinc is a better market than lead both in London and in New York, where the quotation remains unchanged at 11½ cents a pound. Demand is generally good, but there is more than enough metal around to satisfy all requirements.

The US barter programme for lead and zinc does not seem to have helped the markets for these two metals very much. Quotas for both metals in the US and in other countries are filled more or less on the first day of each period and there is a surplus of metal available which will have to be disposed of if market quotations are to be held at their present levels.

Stanton Apprentices' Continental Visit

Once again, the Stanton Ironworks, Company, Limited, are organizing for their foundry apprentices a Continental study tour, this year covering France and Germany. The boys will leave Birmingham by air on July 27 and return about August 8 or 9. To make up an economical travelling quota, the organizers are open to receive applications from other firms to fill up the four or five vacancies. The cost per apprentice (who must be not less than 18 years of age) will be of the order of £35. Interested parties should write to Mr. W. S. Matthews, Stanton Ironworks Company, Limited, near Nottingham.

IBF London Branch Dinner

Applications for places at this year's annual dinner of the London branch of the Institute of British Foundrymen are coming in briskly, but time is now getting short and those who have not yet made their reservations are advised to do so without further delay —to Mr. W. R. Buxton, Eyre Smelting Company, Limited, Tandem Works, Merton Abbey, London, S.W.19. The function is being held at the Connaught Rooms, London, W.C.2, and the programme will include variety cabaret and dancing until midnight.

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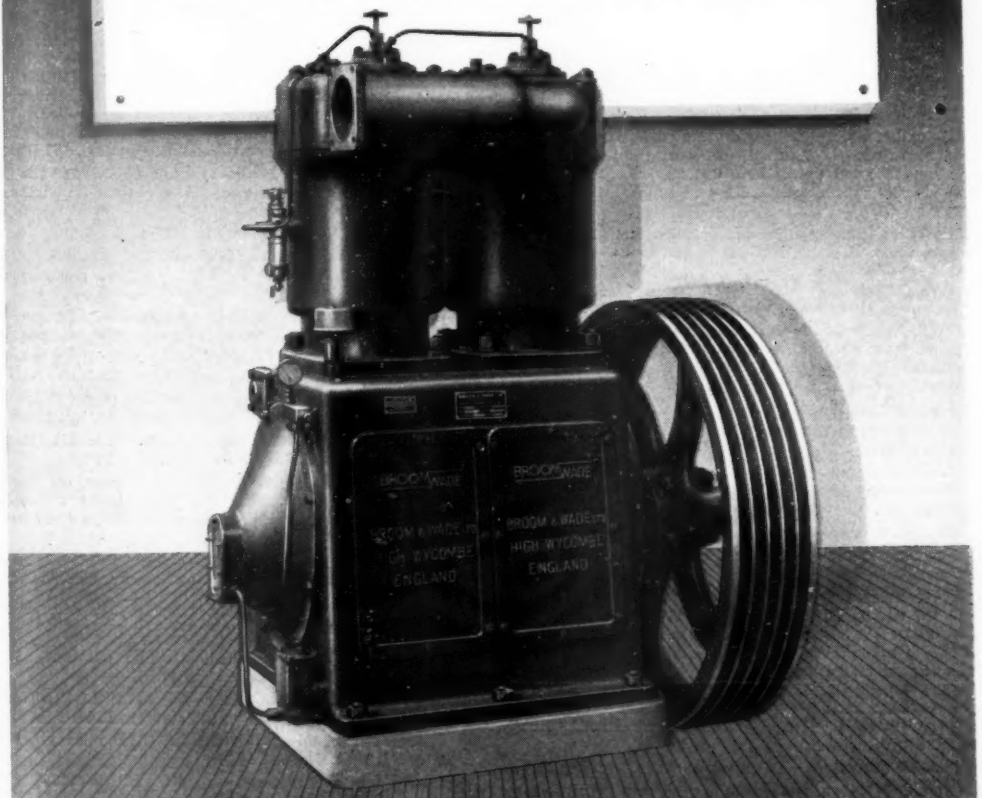

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Current Prices of Iron, Steel, and Non-ferrous Metals

(Delivered unless otherwise stated)

January 21, 1959

PIG-IRON

Foundry Iron.—No. 3 IRON, CLASS 2: Middlesbrough, £21 6s. 0d.; Birmingham, £20 18s. 3d.

Low-phosphorus Iron.—Over 0.10 to 0.75 per cent. P, £23 17s. 0d., delivered Birmingham. Staffordshire blast-furnace low-phosphorus foundry iron (0.10 to 0.50 per cent. P, up to 3 per cent. Si), d/d within 60 miles of Stafford, £24 1s. 3d.

Scotch Iron.—No. 3 foundry, £25 3s. 6d., d/d Grangemouth.

Cylinder and Refined Irons.—North Zone, £25 19s. 0d.; South Zone, £26 1s. 6d.

Refined Malleable.—P, 0.10 per cent. max.; North Zone, £27 6s. 6d.; South Zone, £27 9s. 0d.

Hematite.—Si up to 2 per cent., S. & P. over 0.03 to 0.05 per cent.: N.-E. of England (local iron), £25 6s. 6d.; Scotland (Scotch iron), Zone S.1, £25 13s. 0d.; Sheffield, £26 15s. 0d.; Birmingham, £27 4s. 0d.; Wales (Welsh iron), £25 6s. 6d.

Basic Pig-iron.—£20 3s. 0d., delivered Staffs, Derbyshire, Notts, Lincs, Rutland, Northants, and Leics.

FERRO-ALLOYS

(Per ton unless otherwise stated, delivered)

Ferro-silicon (6-ton lots and over).—45 per cent. Si, £41 0s. 0d. to £43 10s. 0d., scale 15s. 0d. per unit; 75 per cent. Si, £56 10s. 0d. to £60 10s. 0d., scale 15s. 0d. to 16s. 0d. per unit.

Ferro-vanadium.—50/60 per cent., 22s. 6d. per lb. of V.

Ferro-molybdenum.—65/70 per cent., carbon-free, 12s. 10d. per lb. of Mo.

Ferro-titanium.—20/25 per cent., 2-3 per cent. Cu, £250 0s. 0d.; 38/40 per cent., commercially carbon-free, £287 0s. 0d.

Ferro-tungsten.—80/85 per cent., 8s. 6d. per lb. of W.

Tungsten Metal Powder.—98/99 per cent., 11s. 6d. per, lb. of W.

Ferro-chrome (6-ton lots and over).—4/6 per cent. C £77 0s. 0d. to £81 0s. 0d., basis 60 per cent. Cr, scale 26s. 0d. to 27s. 6d. per unit; over 6 per cent. C, £74 10s. 0d. to £77 10s. 0d., basis 60 per cent. Cr, scale 26s. 0d. to 27s. 6d. per unit; 2 per cent. C,* 1s. 7½d. to 1s. 10½d. per lb. Cr; 1 per cent. C,* 1s. 8d. to 1s. 11d. per lb. Cr; 0.15 per cent. C,* 1s. 9d. to 2s. 0d. per lb. Cr; 0.10 per cent. C,* 1s. 9½d. to 2s. 0½d. per lb. Cr; 0.06 per cent. C,* 1s. 9½d. to 2s. 0½d. per lb. Cr.

Metallic Chromium.—98/99 per cent., 6s. 10d. per lb.

Metallic Manganese.—94/96 per cent., carbon-free, £255 0s. 0d.; 96/98 per cent., £285 0s. 0d.

Ferro-columbium.—65/72 per cent., Nb + Ta, 19s. 9d. per lb., Nb + Ta.

Ferro-manganese (home).—78 per cent., £73 0s. 0d.

SEMI-FINISHED STEEL

Re-rolling Billets, Blooms, and Slabs.—BASIC: Soft u.t., £32 15s. 6d.; tested, 0.08 to 0.33 per cent. C, £33 15s. 6d.; hard (0.41 to 0.60 per cent. C), £34 17s. 0d.; silico-manganese, £43 16s. 6d.; free-cutting, £36 14s. 6d. SIEMENS MARTIN ACID: Up to 0.25 per cent. C, £41 1s. 0d.; silico-manganese, £44 4s. 0d.

* Average 68-70 per cent.

Billets, Blooms, and Slabs for Forging and Stamping.—Basic, soft, up to 0.33 per cent. C, £38 10s. 0d.; basic hard, over 0.41 up to 0.60 per cent. C, £39 12s. 6d.; acid, up to 0.25 per cent. C, £43 4s. 0d.

FINISHED STEEL

Heavy Plates and Sections.—Ship plates (N.-E. Coast), £42 2s. 0d.; boiler plates (N.-E. Coast), £44 12s. 0d.; floor plates (N.-E. Coast), £43 11s. 0d.; angles (N.-E. Coast), £39 16s. 6d.; joists (N.-E. Coast), £39 12s. 6d.

Small Bars, Sheets, etc.—Rounds and squares, under 3 in., and flats 5 in. wide and under, untested soft basic, 50 tons and over, £40 0s. 6d.; under 10 tons to 4 tons, £40 18s. 0d.; under 4 tons to 2 tons, £41 3s. 0d.; hoop and strip, coils, £39 0s. 0d.; uncoated strip mill coils, hot rolled, under 3mm. to 12g., £44 16s. 0d.; black sheets (hand mill), 24g., £58 14s. 6d.; galvanised corrugated sheets, 24g., £67 10s. 0d.

Alloy Steel Bars.—1 in. dia. and up: Nickel, £68 10s. 0d.; nickel-chrome, £99 11s. 0d.; nickel-chrome-molybdenum, £111 19s. 0d.

NON-FERROUS METALS

Copper.—Cash, £230 5s. 0d. to £230 10s. 0d.; three months, £227 5s. 0d. to £227 10s. 0d.; settlement, £230 10s. 0d.

Copper Tubes, etc.—Solid-drawn tubes, 2s. 2¾d. per lb.; rods, 244s. 6d. per cwt. basis; 20 s.w.g., 279s. 6d. per cwt.

Tin.—Cash, £763 0s. 0d. to £763 10s. 0d.; three months, £762 10s. 0d. to £763 0s. 0d.; settlement, £763 10s. 0d.

Lead (Refined Pig).—Second half January, £71 12s. 6d. to £71 15s. 0d.; second half April, £71 17s. 6d. to £72 0s. 0d.

Zinc.—Second half January, £74 15s. 0d. to £74 17s. 6d.; second half April, £73 5s. 0d. to £73 10s. 0d.

Zinc Sheets, etc.—Sheets, 15g. and thicker, all English destinations, £110 10s. 0d.; rolled zinc (boiler plates), all English destinations, £108 5s. 0d.; zinc oxide (Red Seal), d/d buyers' premises, £95 10s. 0d.

Brass Tubes, etc.—Solid-drawn tubes, 1s. 10d. per lb.; sheets to 10 w.g., 194s. 0d. per cwt.; wire, 2s. 7¾d.; rolled metal, 194s. 0d. per cwt.

Brass (Brazing).—BS1400, B3 (65/35), £147; B6 (85/15), — ; BS249, —.

Brass (High Tensile).—BS1400, HTB1 (30 tons), £185; HTB2 (38 tons), £183; HTB3 (48 tons), — .

Gunmetal.—BS1400, LG2 (85/5/5/5), £182; LG2 (86/7/5/2), £193; G1 (88/10/2/½), £252; (88/10/2/1), £241.

Phosphor Bronze.—BS1400, PB1 (AID released), £273 per ton.

Leaded Phosphor Bronze.—BS1400, LPB1 (1060), £202 per ton.

Phosphor Bronze Strip, etc.—Strip, 281s. 9d. per cwt.; wire, 4s. 0½d. per lb.; rods, 3s. 3½d.; tubes, 3s. 3½d.; chill cast bars: solids 3s. 3d.; cored 3s. 4d. (CHARLES CLIFFORD, LIMITED.)

Nickel Silver, etc.—Rolled metal, 3 in. to 9 in. wide × 0.056, 3s. 9½d. per lb.; round wire, 10g. in coils (10 per cent.), 4s. 2¼d.; special quality turning rod, 10 per cent., ½ in. dia., in straight lengths, 4s. 1½d. All prices are net.

Other Metals.—Magnesium, ingots, 2s. 3d. per lb. Antimony, English, 99 per cent., £190 0s. 0d. Quicksilver, ex-warehouse, £74 0s. 0d. Nickel, £600 0s. 0d. Aluminium ingots, £180 0s. 0d.; aluminium bronze (BS1400), AB1, £227; AB2, — .